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ABSTRACT

The San Diego Unified School District (California) began operating a computerized routing and scheduling system for its pupil transportation services at the beginning of the 1985-86 academic school year. The computerized system, provided by Ecotran Systems, Inc. (ECO) of Cleveland, Ohio experienced an inordinate number of difficulties. A five-member Superintendent's Organizational Study Team was appointed to study the implementation of ECO. The purposes of the study were: (1) to examine the specific problem in transportation resulting in recommendations for improvement effective prior to the beginning of the 1986-87 school year; and (2) to propose a structural process for developing and implementing major interdivisional change efforts within the district. The methodology for conducting this study evolved over time and consisted of several phases, including the definition of the task, study team work sessions, review of organizational diagnosis literature, review of pertinent background documentation, identification of areas for examination, and determining methods of investigation. The findings were in nine theme areas: rationale for automation; planning and implementation; role of the project team and its effectiveness; technology; contract development and administration; ECO organization and performance; structure for communication; dynamics of leadership; and delivery of service: the site perspective. Appendixes include interview protocols, the Ecosystem survey report, flowcharts on ECO implementation, cost data, and a bus route and ridership audit. (JAZ)

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SAN DIEGO UNIFIED SCHOOL DISTRICT

Superintendent's Organizational Study Team

A STUDY ON THE IMPLEMENTATION OF THE ECOTRAN SYSTEMS, INC. COMPUTERIZED ROUTING AND SCHEDULING PUPIL TRANSPORTATION SYSTEM

Ruben Carriedo, Paul Goren, Mary Hopper, Henry Hurley, Andrea Niehaus

January 7, 1986

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SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

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GLOSSARY

Throughout the report, reference is made to specific groups or individuals by position or task description in the district or in an organization outside of the district. The following key provides the reader a definition of the references.

1. Superintendent's Organizational Study Team (study team) - Five-member study team appointed by the superintendent to study the ECO implementation, referred to as study team throughout the report.

2. Project Team - The interdivisional team appointed by the superintendent to implement ECO.

3. District - The San Diego Unified School District.

4. Ecotran Systems, Inc. - The vendor contracted to provide the student transportation computerized routing and scheduling pupil transportation system to the district.

5. ECO Implementation - The district project to implement the computerized routing and scheduling pupil transportation system.

6. Cabinet - Top district management decision-making body including all division heads and other leaders.

7. Superintendent - Chief administrative officer of the district.

8. Project Team Leader - Manager assigned to lead the project implementation team.

9. Key District Leadership - Division and department leaders in the San Diego Unified School District.

10. Top Leadership - Cabinet members.

11. Department Leadership - Directors of district departments.

12. Key Technical Staff - Management, supervisory and other staff who perform technical duties in the district's Data Systems Department, Transportation department or at Ecotran Systems, Inc.

13. Respondents - Collective term used to describe individuals who participated in any aspect of the study, including interviews and surveys.

14. Academic School Year - Traditional school year from September through June.

15. Base 1 - Designation used for the Transportation department's bus dispatch center primarily for Special Education bus routes. Located adjacent to the district's Instructional Media Center.

16. Base 2 - Designation used for the Transportation department's bus dispatch center primarily for non-Special Education routes such as VEEP and magnet. It also serves as the Transportation department administrative offices. Located at a site several miles from Base 1.

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

A STUDY ON THE IMPLEMENTATION OF THE ECOTRAN SYSTEMS, INC, COMPUTERIZED ROUTING AND SCHEDULING PUPIL TRANSPORTATION SYSTEM

EXECUTIVE SUMMARY
January 7, 1986

San Diego Unified School District began operating a computerized routing and scheduling system for its pupil transportation services at the beginning of the 1985-86 academic school year. The implementation of the new system culminated a five-year involvement of selecting and developing computer technology to route and schedule the district's school buses. The computerized system, provided by Ecotran Systems, Inc. of Cleveland, Ohio, experienced an inordinate number of difficulties when it was implemented this past fall. In this regard Dr. Thomas W. Payzant, Superintendent of the San Diego Unified School District, appointed a five-member "Superintendent's Organizational Study Team" to investigate objectively the implementation of ECO. The superintendent defined the task as twofold:

- To examine the specific problem in transportation resulting in recommendations for improvement effective prior to the beginning of the 1986-87 school year.

- To propose a structural process for developing and implementing major interdivisional change efforts within the district.

The methodology for conducting this study evolved over time and consisted of several phases, including the definition of the task, study team work sessions, review of organizational diagnosis literature, review of pertinent background documentation, identification of areas for examination, and determining methods of investigation.

The study team developed findings in the nine specific theme areas that grew out of their examination of the ECO implementation. The nine theme finding areas include rationale for automation; planning and implementation; role of the project team and its effectiveness; technology; contract development and administration; ECO organization and performance; structure for communication; dynamics of leadership; and delivery of service: the site perspective.

The study team recommends that the district return to the system which existed prior to ECO's implementation, and develop and conduct a small scale pilot of the Ecotran computerized routing and scheduling transportation system to determine if ECO can in fact meet the district's transportation needs while increasing efficiency and improving the quality of service. First, the district has not realized the desired positive benefits to proceed on course. Second, the district has not determined if in fact the system can achieve improved efficiency and quality of service. Third, as late as December there were still problems with the automated system. The study team emphasizes a commitment to pursuing automation for efficiency and improvement of transportation service only after a systematic process has been employed to determine if in fact the desired benefits can be achieved.

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

A Study on the Implementation of the Ecotran Systems, Inc.
Computerized Routing and Scheduling Pupil Transportation System

I. INTRODUCTION

San Diego Unified School District began operating a computerized routing and scheduling system for its pupil transportation services at the beginning of the 1985-86 academic school year. The implementation of the new system culminated a five-year involvement of selecting and developing computer technology to route and schedule the district's school buses. This five-year process included research on the availability of such systems; an attempt at first-year implementation during the 1984-85 school year; and the actual implementation in September 1985. The computerized system, provided by Ecotran Systems, Inc. of Cleveland, Ohio, experienced an inordinate number of difficulties when it was implemented this past fall. Students were not being picked up according to plan because of inaccurate information provided by the new computerized system. Dr. Thomas W. Payzant, Superintendent of the San Diego Unified School District, played an active role in attempting to resolve the opening of school problems by attending evening and weekend work sessions at the district's two transportation bus dispatch centers. His observations and involvement in the implementation helped him to identify some of the issues causing the existing problems. The superintendent admitted that his involvement may have prevented him from understanding the larger context of the problems surrounding ECO's implementation. In this regard, he appointed a five-member "Superintendent's Organizational Study Team" to investigate objectively the implementation of ECO. The five-member task force was formed in October 1985 to address major problem areas related to the implementation of the computerized routing and scheduling pupil transportation system. The superintendent defined the task as twofold:

- To examine the specific problem in transportation resulting in recommendations for improvement effective prior to the beginning of the 1986-87 school year.
- To propose a structural process for developing and implementing major interdivisional change efforts within the district.

The study team based its research on the objectives specified by the district for entering into the investment of computer technology as it is applied to transportation systems. These objectives were specified by district staff in the original request for proposals (RFP) sent to transportation systems vendors. The stated rationale in the RFP, which was distributed to firms nationally in March 1983, included the following objectives:

- o To produce significant economies in the routing, scheduling, and assignments of school transportation bus services. These economies must exceed the cost of the system including the development, installation, and operation of the system. The savings should pay back the costs within as short a time as possible.

- o To allow simulation of alternatives in the transportation system with the ability to change various factors as input to the simulation.

- o To produce bus passes, schedules, manifests, and various reports regarding bus operations on an "as needed" basis. The bus operation reporting system must interface, replace, or be integrated with the existing district computer system operation.

Study team members used this rationale in the design of this report's methodology and in the analysis of data.

Dr. Payzant's intent in appointing the study team was to combine a variety of experience and analytical skills into a team that could report objectively to him information regarding the problems with ECO's implementation. The five-member team included Ruben Carriedo, Planning Director; Paul Goren, Educational Researcher; Henry Hurley, Budget and Cost Control Director; Mary Hopper, Staff Development and Training Director; and Andrea Niehaus, Internal Auditor. Four of the five member team had no previous experience in the ECO implementation process. The range of backgrounds brought together by the superintendent includes a broad spectrum of school and district level experience which enabled the team to examine and analyze the complex technological and organizational issues raised through ECO's implementation.

This report is divided into six sections including this introduction. Section II explains the study team's methodology and use of multiple sources of data. Section III includes background information on the district's five-year commitment to computerized routing and scheduling through document research. The study team's findings and analysis of data is based on over 50 exploratory and indepth interviews, a survey sent to district officials, and several flowcharts, and is presented in Section IV. The study team's conclusion and recommendations are found in Section V. A final section which includes observations made by study team members throughout the data collection and analysis process concludes this report. There are also five appendices to the report which include the interview protocols, the Ecosystems Survey Report, flowcharts on key Ecosystems implementation processes, a cost statement, and a bus route and ridership audit.

II. METHODOLOGY

The methodology for conducting this study evolved over time and consisted of several phases. Descriptions of the several phases and their components are listed below.

A. Definition of Task and Initial Work Sessions

Following the formation of the study team by the superintendent, the team spent several work sessions defining its task and ensuring that its understanding of the task remained consistent with the superintendent's expectations. During this early period, the group relied heavily on information and direction they received from the superintendent when he first named the group and gave it its charge.

Through the work sessions and discussion process, the group defined its task as twofold: to examine the specific problem in Transportation resulting in recommendations for improvement and, to propose a structural process for developing and implementing major interdivisional change efforts within the district. Following the definition of the task, the group continued discussion to generate additional methods and ideas for accomplishing its task.

A very important aspect of the group's early discussion focused on the objectivity of the study team. More specifically, group members came to the realization and common understanding that the integrity of the study and the study team would be dependent on maintaining objectivity. The study team identified three methods for establishing objectivity in the study's design. First, they acknowledged that bias does exist and that study team members would be required to formulate findings from the data and not from preconceived biases. This constant awareness of potential bias by individual members forced the group to rely primarily on the data.

Secondly, the group decided to collect data from multiple sources. This multiple collection enabled the group to gather similar data in different ways, and to report findings that emerged from more than one source and method. This mode of collection enabled the group to address key issues or concerns in various ways, including document review, indepth interviews, and survey analysis.

A final method for maintaining objectivity of the project team included several debriefing sessions in which team members were required to report their initial findings, analyses, and interpretations to the other team members in a group session. These "debriefing" sessions, totaling over fifty hours, generated common understanding of the data, and forced the study team to resolve inconsistencies in the data and their interpretations. Most importantly, the sessions prevented a single perspective from dominating and required that findings be based on data that all group members accepted.

B. Review of Organizational Diagnosis Literature and Identification of Areas of Examination

The study team's second phase of the study's design focused on a review of pertinent literature. The study team reviewed a body of research literature in the area of organizational diagnosis and organizational development, based on the discussions which emerged in the initial brainstorming sessions. From this review of the literature, the team identified appropriate models for undertaking their assigned tasks. These models included a wide range of approaches for examining an organization. Some such as the Harry Levinson model presented in Organizational Diagnosis (1972) included several areas of focus while others such as Marvin Weisbord in Organizational Diagnosis, A Work Book of Theory, (1978) placed emphasis on only a few areas. From these various models, the study team identified general areas for further study including those that appeared in many of the models and those that had specific applicability to the study of ECO implementation in San Diego. The areas common to many of the organizational models found in the literature and used by the study team included leadership, planning and organization, communication and technology. The team supplemented these general areas of organizational analysis with four additional areas related to the ECO implementation including historical background regarding ECO, resources, school site perspective, and interdivisional cooperation. All of the identified areas constituted general themes under which the various data were gathered.

C. Methods of Investigation

Once the theme areas that would structure subsequent data collection had been identified, the study team determined the methods for gathering the data. In general, the study team decided to collect data related to these areas from multiple sources including document review, exploratory and indepth interviews, written surveys, development of flowcharts on key ECO-related processes, financial record review, observations, and bus route and ridership audits. A brief summary of these multiple sources of data collection are listed below.

Multiple Sources of Data Collection

1. Document Review--The study team reviewed several hundred pages of ECO-related documents, including board reports, the Request for Proposals (RFP), the ECO contract and subsequent amendments, minutes from the project team meetings, outside consultant studies of the Transportation Department, and internal district memos related to the ECO implementation. The ECO-related files of several key district leaders provided the source for this data. The number of written documents increased as they came to the attention of team members through interviews, survey, or other written documents obtained while conducting this study. Although the study team recognizes that additional documents may exist and be pertinent to the study of ECO implementation, the team does consider their document review thorough and one of several sources that assisted their understanding of key events in the ECO implementation. The document review became the major source for compiling the Background portion of this report which follows in Section III.

2. Exploratory and Indepth Interviews--The study team conducted over fifty exploratory and indepth interviews with district leadership that included cabinet and project team members, school principals and vice principals, and leadership and key staff in the Transportation and Data Systems departments. Interviews with key management staff and technical personnel at Ecotran Systems, Inc., and top administrative staff in other districts using the ECO computerized system complemented the in-district interviews. The exploratory interviews tended to be general in nature, providing background information about ECO's implementation in San Diego and other cities. The indepth interviews adhered to protocols developed by the study team in seven areas, which included historical information,

communication, leadership, technology, interdivisional cooperation and resources. A protocol for site administrators was also developed to assess the school site perspective of the ECO implementation.

These protocols are listed in Appendix A of this report. Following the development of the protocols, the study team identified a list of individuals who should be interviewed, designating the appropriate interview protocol for each individual. A selected number of key individuals were interviewed in nearly all seven areas, while the majority responded to questions from one, two or three areas.

The study team interviewed individuals who played important roles in the ECO implementation, including cabinet and the project implementation team, key leadership in the Transportation and Data Systems departments, and site administrators and clerical personnel. A selected and representative sample of technical staff members in these same two departments participated in the interviews. The sample of nineteen schools included schools with VEEP, magnet, and special education programs selected from all four of the Operations areas, and among a cross section of four senior high schools, four junior high schools, one middle school, six elementary schools, three atypical magnets, and one special education center. In most instances, principals participated in the school interviews. The school sample represented the diversity in size, grade level, geographic areas, and programs that exist among schools that are prime users of transportation in the district. Key ECO personnel closely related to the San Diego implementation process were also interviewed at the Education Center and through conference calls.

The study team prepared for the extensive interview portion of this study by reviewing and discussing appropriate interview techniques, refining the protocols, and developing a format for writing of fieldnotes to ensure that common data were collected across interviews. The study team also determined that interviews with key individuals would involve a team of two or more interviewers. The interview teams in these situations shared responsibilities in the conduct of the interview as well as in the fieldnote writeup. In all cases, the interviewers took hand notes during the interview and in some cases recorded the session on a tape recorder with the knowledge and permission of the participant. The interview team assured the participants of confidentiality and informed them that data would be presented in a manner that would not link individuals with specific data.

Interviews lasted between one and two hours and in many cases were conducted in two different sittings. The conference call interviews with key respondents from outside the district involved at least three team members and focused on the ECO organization and its performance record with other major school districts. These interviews tended to be open ended with a commonly agreed upon list of questions developed by the interviewers. The interviewees had the opportunity to provide additional information and comments.

3. Technical Survey--The study team determined that the complexity of technical issues surrounding the implementation of ECO required the development and administration of a technical survey to complement the interview data on technology. This multiple source of data collection allowed the study team to collect more detailed technical data from a wider sample than the interview sample. The interview data on technology from a limited sample, coupled with the technical survey data from a larger sample, enabled the study team to gather indepth information about a complex issue from a wide sample of appropriate respondents.

   The study team distributed surveys to all members of cabinet and the project implementation team, and to key technical staff in the Transportation and Data Systems departments. The survey recipients in these two departments included top leadership, as well as a selected sample of primary users of the ECO system such as data programmers and bus dispatchers and schedulers. The survey results are included in Appendix B of this report.

4. Flowcharts--The study team identified the need to develop flowcharts on key ECO-related implementation processes in order to understand their scope and complexity. Flowcharts were developed to depict graphically the processes that the ECO implementation requires for a student to be enrolled in the three most important transportation-related programs--VEEP, magnet, and Special Education.

The purpose of the flowcharts went beyond the initial intention of graphically depicting an important process. They brought to the study team's attention the absence of such flowcharts in the district's implementation of ECO and they documented a complex process that few individuals in the district understand. The flowcharts are included in Appendix C of this report. Reference to these charts is included in the findings section of this report under Technology.

5. Financial Record Review--The study team determined that because the principal rationale for ECO focused on efficiency and cost savings, it would be necessary to include some type of cost statement as part of this report. The constraints of a short time period for conducting the study and the ongoing expenditure of funds prevented the study team from conducting a comprehensive cost/benefit analysis. However, a brief financial statement on the costs of implementing ECO was developed by analyzing existing financial records. The analysis of the financial records did not indicate a cost saving for the 1985-86 school year. It should be noted that this financial record review is preliminary and incomplete because ECO-related implementation costs are still being incurred. The statement of costs related to the implementation is included in Appendix D.

6. Observations--From the study's inception, the study team determined that it would be necessary to conduct on-site observations of the problems resulting from ECO implementation. These on-site visits occurred at schools, on buses, and at the two bus dispatch bases for the Transportation Department. Members of the study team observed the functioning of the system--beginning with a 5:30 a.m. arrival at Base 1 to accompany drivers on their routes to understand how the ECO system worked at its most functional level--picking up students and transporting them to schools. The study team observed the drivers from the time they checked in, picked up their manifest and changes, conducted a safety check of their bus, and ran their route picking up students and transporting them to school sites. The study team also observed dispatchers use the new system at Base 1 and received information about the automated system from supervisory personnel in the Transportation department at both Base 1 and Base 2. These observations became another important source of data for the study team, especially in understanding some of the technical issues and problems which arose with the new system. The observations also resulted in refining some of the questions on the technology interview protocol as well as the technical survey.

7. Bus Route and Ridership Audit--The study team determined that information related to how many students rode the buses would be important in understanding the transportation system and the quality of service. The team selected a representative group of schools at all grade levels in the four Operations areas with programs requiring transportation of students. A team of students from local colleges and universities, supervised by the district's internal auditor, conducted a route and ridership audit for one week. The audit adhered to one standard format for collecting data to ensure that data could be generalized. The audit data and its analysis is included in Appendix E of this report.

D. Debriefing Sessions

Throughout the conduct of the study, the study team held regular (at least 8-12 hours each week) "debriefing sessions" in which individual team members reported on the progress of their data collection and engaged in discussions with other team members to better understand their data. These debriefing sessions allowed for different points of view and interpretation about the same data. They also became the primary source for generating findings across interviews and interviewers. Much of the integrity and objectivity of this study is embodied in the debriefing sessions. Study team members challenged each other to substantiate any proposed findings, conclusions, or interpretations with specific data, and preferably with data from multiple sources.

The debriefing sessions also facilitated the development of the following nine specific themes for reporting the study's findings, recommendations, and conclusion: 1) Rationale for Automation; 2) Planning and Implementation; 3) Role of Project Team; 4) Technology; 5) Contract Development and Administration; 6) ECO Organization and Performance; 7) Structure for Communication; 8) Dynamics of Leadership; and 9) Delivery of Service: Site Perspective. These themes evolved from the seven original general areas of examination.

E. Consensus

Following the collection of all data and several debriefing sessions in which all findings related to the theme areas had been discussed, the study team engaged in a consensus process to generate the principal findings for each of the theme areas. The consensus process consisted of focusing on one theme area at a time, and coming to a group consensus about what the major findings would be for that area. The criteria used for reaching consensus included the requirement that all team members could accept the finding under question, that the finding was supported by data in the team's fieldnotes or ECO-related documents, and that the finding came from multiple sources of data. This consensus process provided a systematic approach for ensuring that the study team did formulate findings from documented data, and that the perspective or bias of an individual member would be balanced by the objectivity of the entire team.

F. Conclusion and Recommendations

The conclusion and recommendations were systematically developed only after careful consideration of all of the findings, analyses and interpretations. The study team maintained their objectivity using similar criteria for the conclusion and recommendations as used for reaching consensus on the findings. The recommendations result from findings and analyses that were derived from the collected data.

III. BACKGROUND

The study team collected a wide variety of written documents regarding the acquisition of the computerized routing and scheduling system in order to understand the broad nature of the problem. The historical data below, presented in chronological order, documents the five-year process involved in acquiring, developing, and implementing the new system. Documents were obtained through a variety of sources including: project implementation team members; the superintendent's file on Ecosystems; Board of Education meeting minutes; internal district memos; and the Assistant Superintendent for Business Services. The chronology of key events and documents below form the basis of the study team's investigation.

KEY EVENTS AND DOCUMENTS

July 1980	District proposes pupil transportation study and solicits proposals.
September 1980	District awards Price Waterhouse Co. contract to study student transportation operation.
January 1981	District receives Pupil Transportation Study report by Price Waterhouse Co.
March 1981	District staff develops recommendations for pupil transportation based on Price Waterhouse Co. study.
September 1981	Board of Education receives report from Superintendent Goodman on transportation policies, procedures and current problems concerning expanding transportation services.
October 1981	Board of Education holds public meeting at the Transportation Department and was given a thorough review of the pupil transportation operation and several cost estimates for increases in services.
November 1981	District approves proposal for community/staff review of Pupil Transportation Services by appointing District Advisory Committee for Pupil Transportation Services.

BACKGROUND (continued)

April 1982	District receives report from District Advisory Committee on Pupil Transportation Services which includes 46 recommendations.
June 1982	District staff responds to recommendations of the District Advisory Committee for Pupil Transportation Services.
June 1982	Board of Education approves adjustment of school starting/dismissal times resulting from recommendations in Transportation Study Report.
July 1982	District staff responds to District Advisory Committee's 46 recommendations for Pupil Transportation Services (which includes the first reference to automated system).
July-August 1982	District staff researches availability, capabilities, and applications of computer systems for Pupil Transportation in districts and firms throughout the nation. District staff concludes that automation would result in significant cost savings. Staff concludes that private firms possess the needed software and therefore the district should contract for the services.
October 1982	Acting Superintendent Brucker directs staff to proceed with automated routing and scheduling project by developing Request for Proposals (RFP).
January 1983	District staff develops technical specifications for the RFP which are reviewed by outside technical experts in San Diego high tech and business community.
February-March 1983	District advertises RFP in national trade publications and through direct mail to 31 firms which specialize in transportation software and systems development.
April 1983	District receives eight responses with five proposals to the RFP.

May 1983	District staff provides initial evaluation and reviews proposals with district technical advisory team. District staff accepts four proposals for comprehensive evaluation.
May-October 1983	District conducts comprehensive evaluation of proposals and visits cities in which the three finalist vendors operate similar transportation programs.
October 1983	District staff and outside technical advisory committee selects Ecotran Systems, Inc. and recommends immediate contractual negotiations between district and ECO.
November 1983	District staff develops contract with assistance from legal office.
December 1983	Board of Education approves a contract with ECO, for a maximum amount of $782,970, to develop and implement a computer generated routing and scheduling system. The term of the contract began with the signing on December 7, 1983, with a scheduled termination date of June 30, 1986.
January 1984	ECO report entitled "Enrollment Project Discussion Document--San Diego Unified School District" describing ECO's understanding of San Diego's data bases and what they proposed for the district to maintain.
June 11, 1984	Status report on ECO indicates implementation in jeopardy. (no documentation available, reference to report is made in July 12, 1984 document).
July 12, 1984	Stephens memo to Mattox notes that initial project implementation is still in jeopardy. (Eight page memo includes documentation of delays and problems).
August 1984	Initial implementation of ECO "aborted." (From study team interviews, no documentation)

October 3, 1984	Superintendent Payzant names Ecosystems Project Team, with charge to develop, review, and/or enhance "such project requirements as student enrollment procedures, details of software design and district/data processing timelines." (Meetings begin week of October 10, 1984.)
November 16, 1984	Business Services document establishes district timelines which may be affected by ECO implementation in 1985-86.
November 29, December 14, 1984	Project Team meetings
January 7, 1985	Tompkins memo to Project Team documenting high student mobility during summer 1984 and opening of 1984-85 school year. (Findings: degree of elementary school movement between June and September is very high; secondary school movement is very high during first five weeks of school)
January 8, 11, 18, 1985	Project Team meeting minutes; initial identification of hardware/software differences between ECO and San Diego Unified School District, timeline and data accuracy concerns; tentative program and data deadlines; physical flow of data from school sites to Data Systems discussed; identification of conflict between Spectrum review process and ECO meeting milestones; concern expressed regarding the monitoring of the contract; open discussion by project team members in meetings that implementation would not be achieved; request for committee plan with timelines. (Lack of clarity about whether deadlines for enrolling students in programs have been established or accepted.)

BACKGROUND (continued)

January 29, 1985 — "Ecosystems Project Status Report" written by project implementation team leader. The report states the following: "Ecosystems on-line installation is scheduled for completion May 15; changing the district's student data form is being prevented because Data Systems unable to define how long it will take them to program needed changes...; the initiation of a temporary process to capture requested information about students for next year; concerns expressed by Community Relations Integration Services Division (CRISD) regarding having Elementary Magnet Application in by May 15; concern regarding Special Education Audit of December 12, 1984 and removal of Special Education students from student data base making it impossible to route and schedule these students by computer; no need to change student data base for students with alternate service addresses since only 542 cases exist where it is necessary; "the need for a detailed plan is a meritorious idea...such a plan would not last any longer than the time it would take to type it", citing the reluctance "of district staff to make bold or innovative moves to meet the challenges this project requires"; and that Ecosystems works in over 80 districts nationwide with active commitment by their Data Processing departments. (Document from superintendent's file on ECO, not clear of the distribution or utilization of the information provided.)

February 12, 1985 — Board of Education received ECO project progress report (no problems or concerns are cited).

- Proposed Implementation Plan (3/4 page with no specific dates or responsibilities).
- Secondary Inservice Outline (with specific dates for student data cutoff deadlines).

February 22, 1985 — Harris/Stein memo to Frey regarding CRISD implementation of ECO timelines. Memo acknowledges changes in enrollment and further recruiting after the ECO time lines passed.

February 22, 1985 — Memo citing issues/concerns in regard to school inservice meetings of 2/19 - 2/21 (bus passes).

February 25, 1985	Update of Existing Timeline/Deadlines document initially developed on November 16, 1984. (No issues, concerns, or specific responsibilities documented).
March 6, 1985	Bob Casey memo regarding Special Education concerns.
March 6, 1985	Tompkins/Isaac memo to Project Team regarding Ecosystem Project statement of concern.
March 6, 1985	Liddell memo to Isaac regarding ECO concerns.
March 7, 1985	Stark memo to Isaac regarding ECO concerns.
March 8, 1985	Isaac memo to Barnes enumerating areas of concern held by committee members including role of committee, insufficient attention to some aspects of ECO implementation, perceived disruption in the flow of the committee's communication and effectiveness.
March 12, 1985	Chuck Raleigh memo to Ron Anderson regarding transportation problems under new Ecosystems.
March 19, 1985	Snyder memo documenting program tasks Data Systems needs to do for ECO.
April 12, 1985	Project Team meeting with Russell to express concerns regarding ECO, including bus pass issue, statement of objectives, no systematic layout of project direction, interpretation of policies, communication.
May 3, 1985	Tompkins memo to Project Team regarding visit to Dade County (Miami) schools regarding their first year ECO problems: "worst opening of school in years," bad addresses, lateness of ECO delivery, cost saving questionable, have gone back to manual routing for Special Education, did not use bus passes.

BACKGROUND (continued)

May 21, 1985	Crane memo (18 pages) to Barnes with Data Systems staff concerns about ECO implementation, including: 1) management issues related to planning and communication; 2) update on Data Systems responsibilities; and 3) technical problems.
June 4, 1985	Project manager's Progress Report to Board of Education on ECO. (No indication of problems or concerns previously mentioned in this summary).
June 11, 1985	Board receives Price Waterhouse study on Pupil Transportation Department. (It must be noted that this report was commissioned by the Board of Education on April 30, 1985, independent of ECO's implementation, to study the way in which the Transportation Department was organized. Study found that current transportation organization contributes to several of the problems related to qualitative operational considerations; no direct reference to ECO, but report made references to length of time to process service requests. Study recommends the department's focus to be on service quality at this point.)
June 24, 1985	Tompkins/Crane memo to Mattox/Russell titled "Establishing Separate ECHOSYSTEMS Data Base" citing unilateral decision on "Batch-Match" with no input from Data Systems and Project Team. (action taken unknown)
June 25, 1985	Amendment to ECO contract to include "batch/match".
June 25, 1985	Board of Education receives report from Business Services entitled "Implementation Plan for Price Waterhouse Study Recommendations" (with reference to link-up recommendations to implementation of ECO).
July 5, 1985	Project Team Bus Pass Committee Report. (17 pages in length, including 16 recommendations; action taken unknown).
August 1, 1985	Liddell memo to Barnes recommending that district develop new student enrollment and student location change form. (action taken unknown)

BACKGROUND (continued)

August 2, 1985	Isaac memo to Nafziger regarding ECO project team concerns and requesting attention of superintendent and top level management to resolve major problem areas.
August 2, 1985	Nafziger note to Payzant accompanying Isaac memo bringing committee concerns to Payzant's attention. (Nafziger questioned whether committee's concern was real or perceived.)
August 7, 1985	Mattox memo to Payzant responding to Isaac memo of August 2. (Mattox responds to concerns, point by point).
August 9, 1985	Stein/Gilliland memo to Barnes regarding the transportation of VEEP and Magnet students. Memo acknowledged the 1,200 students who were not considered eligible for transportation, were rejected from the computer system and had to be re-submitted for transportation services. Memo also noted the recruitment of VEEP and Magnet students between the time the tape was submitted and September 6, 1985 resulting in many students not on the ECO computer tape.
August 19, 1985	Lottie Hess' Implementation Plan for ECO and Manual System (includes timelines and activities which need to be performed).
August 19, 1985	Holt memo to Crane documenting technical concerns "will ECO deliver the software on time?"; "not clear what will be sent to us;" "many unanswered questions"; "all of things above can almost guarantee failure."
September 3, 1985 September 10, 1985 September 17, 1985 September 24, 1985 October 1, 1985 October 8, 1985	Board of Education minutes: information report on opening of school --Pupil Transportation 9/3/85; Superintendent's Information Report - Update on Transportation (9/10, 9/17, 9/24, 10/1, 10/8).

September 26, 1985	Snyder memo to distribution (Barnes, Hess, Holt, Isaac, Liddell, Marsteller, McGlathery, Miller, Tompkins) regarding problems between Transportation data base and student data base.
October 1, 1985	Snyder memo to task force regarding materials created by ECO, (such as manifests, routes, and TEF reports).
October 1, 1985	Superintendent Payzant names Ruben Carriedo, Paul Goren, Mary Hopper, Henry Hurley, and Andrea Niehaus to the Organizational Study Team to analyze the problems evident with ECO's implementation.

The background information available provides some perspective to the district's implementation of Ecosystem's computerized routing and scheduling pupil transportation system. The study team notes the five-year process between the identification of potential need and actual implementation. It is also evident that the district, with assistance from local experts, invested over a year and a half in the development of the RFP and subsequent proposal analysis. Many of the concerns raised during ECO's implementation were raised in written memoranda prior to implementation. The 'communication' section of this report discusses this finding in more detail. The information documented in this section provided study team members with historical perspective to assist in data collection and the subsequent analysis which follows.

IV. FINDINGS, ANALYSIS AND INTERPRETATION

The study team developed findings, analyses and interpretations in the nine specific theme areas that grew out of their examinations of the ECO implementation. These findings are drawn from the several sources of data identified in the methodology section of this report. The analysis and interpretation reflect the study teams' collective understanding of the findings as they relate to the study team's assignment.

A. RATIONALE FOR AUTOMATION

Findings

The study team developed two major findings related to the theme of rationale for automation.

1. Key district leadership reported that the primary rationale for acquiring and implementing the ECO system for computerizing the routing and scheduling of student transportation requirements related to both improving the quality and efficiency of service and to obtain the cost benefits of automating the student transportation system.

2. The study team identified, in the June 6, 1985 report from the consultant study on the district's pupil transportation services conducted by the Price Waterhouse Corporation, (Board Agenda of June 11, 1985, item N.3.e), that the majority of the economies available to California school districts in transportation costs are in the use of college students as bus drivers (thus avoiding the payment of high cost employee benefits). Further efficiencies in the route planning area have a more modest efficiency impact.

Analysis and Interpretation

There is strong evidence to suggest that neither of the stated rationale for acquiring the system has been achieved. The district undertook the implementation of the automated transportation system to achieve efficiency and improve the quality of service. The data from school principals indicates that the quality of service has not improved and in fact has deteriorated considerably compared to prior years. As of November 15, 1985, the district's financial records show that the district's actual expenditures for the fiscal years 1983-84, and 1984-85 and the actual expenditures and projected expenditures for 1985-86 for the ECO project total $1,097,355. The significant items included in the expenditures through November 15, 1985 are the ECO contract, $706,217; the Data Systems consultants, contract programers and IBM specialist, $144,622; and the transportation hotline service, $79,078. This information is included in Appendix D. The study team questions whether the district's desire to achieve efficiency through computerized routing and scheduling is consistent with the recent Price Waterhouse report.

B. PLANNING AND IMPLEMENTATION

Findings

The study team developed nine major findings related to the theme of Planning and Implementation of ECO. These findings include:

1. Key district leadership, including cabinet and project team members, acknowledged the absence of an implementation plan.

2. The study team in an extensive review of ECO-related documents, did not find a comprehensive implementation plan that included major activities and related tasks, assigned responsibilities, timelines, and monitoring system.

3. The project leader expressed a point of view, in a status report to the superintendent on January 29, 1985, that questioned the advisability of developing a plan despite specific requests from project team members.

4. Key district leaders including cabinet members suggested that the district should have phased in ECO, bringing in different programs over time and fully implementing only after a pilot program.

5. Key district leaders including project team members indicated that the district did not realize the scope of resources, time, and complexities involved in implementing the ECO system.

6. Transportation staff indicated that problems in ECO's implementation were related to the lack of the district or ECO adequately training those responsible for the system's day-to-day operation.

7. Key technical staff in Transportation reported that improvement in the system after implementation was the result of entering manual routes in the automated system and the increased staff over the 1984-85 level.

8. Transportation staff indicated major problems with the initial routes including timing, seating capacities, and efficiency.

9. Although key Data Systems staff were members of the project team, it is not clear to the study team how the Data Systems department was involved in the ECO implementation process.

Analysis and Interpretation

Three central questions address the findings related to a plan: Did a plan exist? What constitutes a plan? How did the project leader view the concept of plan development? In response to the first question, what the study team considered important was the perception and articulation of key leaders that a plan did not exist. What became even more significant was the project team's desire for a planning document to guide their work. Thus, the absence of a plan and key implementors' desire for a plan indicated an unfulfilled need, and one which may have transcended the actual task of implementation and brought into existence a lack of confidence in the project.

In response to the second question--What constitutes a plan?--the study team found elements of a plan in two key ECO-related documents including: a three-quarter page document entitled "Proposed Implementation Plan Activities" in a ECO progress report to the Board of Education on February 12, 1985, and a six-page document with chart entitled "Existing District Timelines/Deadlines Which Impact or Are Impacted by Transportation Services," in a subsequent ECO progress report to the Board of Education on February 25, 1985. It should be noted that although these two documents would constitute important elements in an implementation plan, the study team did not consider them a comprehensive plan because they did not include assigned responsibilities, a monitoring system, and any indication of how certain activities would be accomplished. Even without addressing the value of a comprehensive implementation plan, the study team acknowledges what key district leaders acknowledged--there was no plan.

These findings and analyses are supported by an important document entitled "Ecosystems Project Status Report," prepared by the project team leader and shared with the superintendent at the end of January 1985. In this document the project team leader articulated a point of view about a detailed implementation plan. While acknowledging such a plan as a "meritorious idea," the leader associated the request for such a document by project team members as an indication of "reluctance or resistance of district staff to make bold or innovative moves to meet the challenges this project requires." The study team does not disregard such a position as a plausible view of a plan document under certain conditions. However, the study team cites this key statement as a way of understanding why the comprehensive plan did not exist. Moreover, the study team questions the value of taking a "no-detailed-plan" position when a number of key implementors desired it. Finally, the study team's analysis of the scope of ECO implementation indicated a need for a detailed implementation plan based on the amount of resources

Analysis and Interpretation (continued)

devoted to the project. This need is based on the need for large interdivisional cooperation and change that would have to take place for ECO to work. In the view of the study team, people ultimately accept change when they understand its value and know what their role will be in the change process.

The study team's analysis of implementation findings relate to defining the complexity of ECO implementation, the lack of pre-implementation planning and training, suggestions for a phase-in or pilot project, and manual routing of a system designed to be automated. In the study team's view, it is not surprising that key district leadership reported that the district did not fully realize the scope of ECO's implementation, especially if the same leadership acknowledged the absence and need for a plan. The consequence of not realizing the true scope of the project was the creation of an unanticipated, heavy ECO-related workload for many people involved in the implementation.

Key leadership also suggested that the scope of ECO's implementation warranted consideration of a phasing in of the system with different programs over a period of a year. For instance, some suggested that ECO should have begun initially by providing service to only VEEP students, and phasing-in magnet and special education at a later time. A key leader indicated that a ECO pilot program should have preceded the full implementation effort. These suggested alternatives to the full implementation suggests that key leadership held a premonition about the advisability of proceeding with implementation in the first year. Key technical staff indicated that they received very little training on how to operate the system and that they relied on the old system to fix what they perceived as problems created by the new automated system. The lack of adequate training and technical problems resulted in key technical staff not understanding the new system fully, and in the study team's view this may have contributed to some initial resistance, or lack of commitment on their part to the new automated system. Thus, using a known entity--the system which existed prior to ECO--to fix the new made sense to the technicians and study team. However, the study team concluded that manually routing the buses and then entering the manual routes on the automated system may have made the implementation appear more successful than it was.

C. THE ROLE OF THE PROJECT TEAM AND ITS EFFECTIVENESS

Findings

The seven major findings related to the role of the project team and the team's effectiveness are as follows:

1. District leaders identified the role of the project team as one of implementing ECO.

2. Project team members reported that although they knew their primary role was to implement ECO, they did not understand their role well nor the scope of their assignment.

3. Project team leadership reported that the team had no authority and that its role included becoming knowledgeable about the system.

4. Project team members reported that the team spent too much time educating each other about their divisions and their respective work as it related to ECO and not enough time in accomplishing the task of implementing the system.

5. District leaders and project team members reported that the team was ineffective despite its interdivisional composition of knowledgeable people.

6. District leaders and project team members attributed the team's ineffectiveness to lack of leadership within the team.

7. Project team members expressed dissatisfaction with their participation on the team because of several factors including: being ignored by leadership; not completing the team's assigned task; not understanding the scope of their task because there was no plan, no timelines, nor assigned responsibilities; not being able to convince the appropriate leaders that problems existed; and the style of leadership demonstrated by the project team manager.

Analysis and Interpretation

The study team's analysis of the project team role data focuses on the first four findings, and addresses three central questions: What was the role of the project team? How well did the team understand its role? How did the leadership of the team articulate the team's role? In the view of the study team, consensus existed among district leaders and team members about the role of the team--the implementation of ECO. However, despite this consensus, project team members reported that they did not understand their role well, especially the scope of their task. The study team interpreted this lack of clarity as an indication that the project team did not know or understand their overall charge. And although the project leadership may have conceptualized an overall plan, it was not communicated effectively to team members or district leadership. It is interesting to note that the project team leadership indicated an educating-each-other aspect to the team's role, and that team members reported that too much educating occurred and not enough implementation. This educating role is a reasonable one given the interdivisional nature of the group, however, the degree to which it dominated or overtook the implementation role is what project team members questioned.

The study team found it necessary to review the project team's charge from the superintendent's memo naming the project team. An analysis of this key document indicates that the project team may have had two primary roles, that of developing an implementation plan and then implementing the plan. However, it is not entirely clear from the memo if an overall implementation plan already existed or whether the project team held responsibility for developing all or part of such a plan. This lack of clarity on such a key issue as the team's charge is reflected in the lack of clarity project team members expressed about what they were supposed to accomplish.

It is difficult to end this discussion on the role of the project team without making reference to the leadership of the project team. It is reasonable to believe that the leadership of the project team should have become aware of the project team's frustration and tried to determine the source of the frustration. It is also reasonable to believe that the leadership of the project team should have considered the development of the implementation plan as a primary activity for the team, or communicated what the plan was and what responsibilities team members held. This apparently did not occur.

The analysis of the project team's effectiveness findings is closely related to the team's role. It is not difficult to understand how lack of clarity about their role and its

Analysis and Interpretation (continued)

scope contributed to the ineffectiveness of the team. If the team did not understand what they were to do, then they probably had a difficult time accomplishing their task. Thus, it is not surprising that consensus existed among key district leadership, project team members, and project leadership about the team's ineffectiveness. However, beyond the lack of role clarity, other reasons were identified as a source of frustration, dissatisfaction and ultimately ineffectiveness of the team. These other contributing factors included leadership, communication, responsiveness from key district leadership, and planning. The frustration of project team members deserves attention. Team members indicated they wanted the system to work, were willing to work hard for the project, and some indicated the willingness to give up "turf." Despite these basic ingredients, a group of very competent individuals encountered great frustration because they were unable to answer such basic questions as: What are we supposed to do? And how are we going to do it?

In summary, the positive attributes of the project team--its interdivisional composition, their competence, and seeming willingness on the part of some to make ECO work--could not override a number of group process concerns and organizational issues to accomplish its task.

D. TECHNOLOGY

Findings

The issues identified within the technology section are difficult to understand without explanation. The twelve technology findings identified by the study team are followed by brief explanations where necessary.

1. Key Data Systems Department and Transportation Department respondents indicated an expectation that the ECO Systems would be 'turn-key' in nature (i.e., computer programs and systems which could operate without any direct programming from San Diego Unified School District staff). The same respondents stated that these expectations were discussed with officials of the district and ECO during the original development of the contractual agreement.

2. The study team noted that the top leadership in the Transportation and Data Systems departments were involved closely in the selection of the system, providing technical expertise, but were not as involved in the 1985-86 implementation process. They were represented on the project implementation team, yet seldom called upon to share their insights or expertise developed in the early aspects of the ECO project.

3. District and ECO respondents stated that the implementation of ECO in San Diego required unprecedented modification by ECO of their standard package to accommodate district needs. The standard package - which had been modified to meet Dade County (Miami Public Schools) specifications - with the modifications for San Diego had not been implemented by ECO in any other school district. Examples of the modifications included the establishment of the Transportation Enrollment File (TEF), the Master Bus Stop (MBS) file and Batch/Match, among others.

4. A majority of the respondents indicated that the district underestimated the amount of technical support required to implement the ECO System. ECO respondents critically questioned the district's technical expertise in the Data Systems Department as it compared to the other districts where ECO has been implemented. These responses related to problems which became evident because of computer language, the installation of software, and troubleshooting during the implementation of ECO. ECO's technical staff also questioned the amount of access provided to the vendor in the installation of the software. The respondents reported that the access provided ECO staff went beyond that which is normally afforded to vendors working on a client's computer system.

TECHNOLOGY (continued)

Findings (continued)

5. Data Systems and Transportation respondents stated a concern about the limited training in operating procedures received by day-to-day ECO users. These users include Transportation dispatchers and the staff in Data Systems responsible for ECO software and operation.

6. Key Data Systems leadership expressed concern regarding the proprietary nature of ECO's basic software, which does not permit the district direct access if modifications or changes are necessary. The same respondents stated that computer systems documentation on current ECO software did not exist. ECO's technical staff acknowledged that the documentation task had not been accomplished as of December 1, 1985.

7. Several key district leaders questioned the ownership, access and accuracy of the student data base. It is not clear to the respondents or the study team whether School Operations, Data Systems, and/or other district departments "own" the data and whether they understand their responsibilities in regard to the available data. These responsibilities relate to improving the accuracy of student data which is essential for ECO to work effectively.

8. The study team noted that ECO's successful implementation in other districts required the establishment and adherence to strict deadlines for program enrollment processes. It is evident from document research (reference in 'key events': August 9 memorandum) that registration for integration programs occurred after documentation was sent to ECO's Cleveland office.

9. The process for obtaining transportation service under ECO which is depicted in the flowchart found in Appendix C is complicated, time consuming, and could be indicative of the organization within the Transportation Department.

Findings (continued)

10. Key Data Systems personnel acknowledged that the 1985-86 implementation of ECO Systems resulted in the addition of a separate data base. The initial design for ECO linked the Student Data Base (SDB) to the Transportation Enrollment File (TEF) to limit the redundancy of district data. The link between the SDB and the TEF theoretically allowed changes in one file to be reflected on the other. However, complications arose during the summer, when the SDB and the TEF became out of 'sync.' The SDB and the TEF effectively became two data bases which were connected by student identification numbers but not interactive.

11. Key Data Systems personnel identified a point in mid-June 1985 where significant technological problems relating to ECO were so great in their opinion that the system should not have been implemented at the beginning of the school year. At that point problems existed in ECO's software and the district's student data base. Respondents indicated that the decision to go forward at a crucial time in mid-summer 1985 was dictated by the district's "political" environment and commitment to computerized routing and scheduling, rather than addressing existing technological problems. The study team interpreted the "political" environment to represent the perception among key district staff that the Board of Education and the superintendent had a commitment to the automated system, and that it was imperative to go forward with ECO because of the perceived commitment.

12. The study team found very few district staff members who actually understand the complexity of the data base issue as it has evolved with the implementation of ECO.

Analysis and Interpretation

Several interpretations can be made regarding the data provided by respondents on technology. It is not clear to the study team whether ECO or the district actually understood the overall complexity of this project. While the district was expecting a 'turn-key' system, ECO developed software very different from that which had been developed for other school districts. The 'turn-key' expectation can possibly explain why it was necessary for ECO to have access to the district's system and why ECO may have criticized the capabilities of the district's technical staff. This leaves the district in a vulnerable position, dependent upon the expertise of ECO for installation,

Analysis and Interpretation (continued)

documentation and troubleshooting of a newly developed computer software system. The district may still be in a vulnerable position, since specific computer software systems documentation (identifying changes or modifications in software) has not been prepared by ECO's technical staff.

The district should question whether it wishes to be in such a vulnerable position. Adherence to the 'turn-key' expectation may have prevented any internal expertise regarding ECO from developing. The study team noted in the findings a perception that relatively few district staff understand and can document the complex software and data base issues regarding ECO's implementation. This leaves the district staff in a position unable to identify problem areas and any potential solutions. This may have been the case as problems were defined prior to ECO's implementation.

Accurate and timely data flow are essential to ECO's success. Interview data and document research indicate that program enrollment deadlines were suggested, yet it is not clear whether they were established or followed in regard to ECO. Existing district policies are inconsistent with ECO deadlines. It is not clear whether the ramifications of not meeting ECO deadlines were clearly understood. The investment in a computerized routing and scheduling system dictates specific technologically based deadlines rather than those based on policy or program needs. The district's priorities needed to be decided prior to implementation. If the computerized system is to work, deadlines must be followed. Yet if strict program deadlines are established, what sort of impact will be felt on the district's integration programs? It is evident to the study team that the district has not fully reconciled these issues.

The data required by ECO Systems need to be as accurate as possible. The study team found individuals expressing doubt concerning the accuracy of data in the district, yet most could not identify who is responsible for the data. The implementation of ECO only emphasizes this issue further. How does the district plan to "clean-up" the data base? Who has that responsibility? Does it rest with School Operations, Data Systems, and/or individual school sites? Without accurate data, the potential which computerized routing and scheduling provides is minimized. The logic behind this is clear, which is why it is essential to determine who 'owns' and is responsible for accurate data.

Analysis and Interpretation (continued)

The technological complexity of the system required knowledge of the software and data bases, adherence to strict deadlines, accurate data and the ability to identify problem situations. There is evidence indicating that district staff did not have direct knowledge of how the system works, partially caused by the lack of adequate training and direct access to ECO software. Nevertheless, an investment into a technological improvement does not seem to be effective, as in this case, until an investment is made into developing a clear understanding of the complexities of a system. The district otherwise is left in a powerless position dependent upon the vendor's expertise and a 'blind faith' that the technology will indeed accomplish its task.

E. CONTRACT DEVELOPMENT AND ADMINISTRATION

Findings

The Study Team developed five major findings related to the theme of contract development and administration.

1. Key district leadership reported that the contract with Ecotran Systems, Inc. has become an important issue in the implementation of the computerized routing and scheduling of school buses for the Pupil Transportation Programs.

2. The short time period in which the contract was written resulted in a general contract.

3. Both Ecotran Systems executives and key district personnel reported that the "gentlemen's agreements" between the district and Ecotrans Systems, Inc. changed (or were lost) when the senior executives were replaced within Ecotran Systems, Inc.

4. Other districts that have implemented the Ecotran system effectively indicated that the close monitoring of the contract was an essential element in the implementation of the automated system.

5. Key district leadership indicated that no one within the district was clearly responsible for the contract administration, and the district did not monitor the contract to ensure contractor performance.

Analysis and Interpretation

Interview data indicates that the contract emerged as a prominent issue. The contract took on importance in the areas of not tying payment to performance standards and the loss of the "gentlemen's agreements" between the district and Ecotran Systems. The study team questions why the district did not have a systematic process for contract development, contract administration, contract monitoring, and contract amendments, given the significant financial commitment.

F. ECO ORGANIZATION AND PERFORMANCE

Findings

As noted earlier in the methodology section of this report, the study team collected important data from key interviews with ECO staff, and other ECO user districts in Milwaukee and Dade County. This data provided historical background as well as very important information about ECO's organization and the performance of their automated student routing and scheduling system in other urban school districts. Five major findings emerge from the data gathered through telephone conference call interviews.

1. Senior ECO management and district leadership acknowledged key staff turnover at ECO may have had a negative impact on the district's implementation of the system.

2. Senior ECO management acknowledged that the "gentlemen's agreements" made during the initial contract negotiation process may have been lost by the time ECO was implemented in the district. The loss was attributed to turnover in ECO staff.

3. The study team found that Milwaukee-a district which transports more students than San Diego and with integration and special education programs--has successfully implemented ECO, and are entering their sixth year of satisfied service with the system.

4. Milwaukee reported that an important aspect of their successful implementation related to the development and adherence to strict program enrollment deadlines which was a policy change that their superintendent actively supported. The program enrollment deadlines policy allowed sufficient time for review and testing of routes.

5. Dade County (Miami) Public Schools, a district of larger size and transporting more students than San Diego, encountered similar first year implementation problems as San Diego. Although Dade County has resolved some of the more pressing problems utilizing the expertise of their internal staff working with ECO, they are not entirely satisfied with the company and its product. It should be noted that the responsible manager in Dade County is considering obtaining a license from ECO to use their software, and not rely on them for future technical support. Their district data staff would fully support the independent operation of ECO. In retrospect, the manager indicated if he knew then what he knows now, he would have written the transportation program internally.

Analysis and Interpretation

The study team's analysis of the findings related to ECO's organization focused on the stability of the vendor organization, and the experience other districts had encountered using the ECO product. Three different sources including ECO management, other districts, and San Diego project leadership acknowledged staff turnover at ECO as an issue warranting attention. All but one key person at ECO has left the organization in the period of time the district has worked with them. The turnover has resulted in lack of continuity in the development of San Diego's customized version of ECO's standard package, lack of agreement on some unwritten understandings that existed in the initial phase of San Diego's relationship with ECO, and a vague sense of vendor instability. The study team emphasizes this issue as one warranting district attention if the district decides to continue its relationship with the vendor.

A second level of analysis relates to the ECO performance data from other cities. Initially the study team had a difficult time understanding the "success story" for ECO in Milwaukee and the more familiar Dade County version, an implementation wrought with problems in its first year. The study team's analysis of this apparently inconsistent data focuses on Milwaukee's nearly ten year association with ECO, their program enrollment deadline policy, and their strict enforcement of contractual agreements. Milwaukee spent nearly two years of planning time before implementing ECO. This established track record with ECO is complemented with a very strictly enforced program enrollment deadline policy which created many changes in their district and required the active support of the superintendent. Milwaukee officials openly acknowledged the crucial role the superintendent played in establishing and enforcing the program enrollment deadline, and the importance of this initial commitment to ECO and its subsequent success. Milwaukee also indicated the need "to ride herd" over ECO to ensure that contractual deadlines and specifications are met. Thus, in the view of the study team, Milwaukee is an example of a situation where ECO can work but only under certain conditions.

Dade County's experience is an example of ECO working in a different manner for a district just beginning a relationship with the new ECO organization (after key staff turnover at ECO). Despite many problems in its first year of implementation, Dade County has continued with ECO for a second year but is hesitant about making a further commitment. Their option to sever their relationship with ECO is reinforced by their key leadership indicating that their own data staff has the capability to develop the system to meet their future needs. Dade County also emphasized the importance of the contract monitoring in their association with ECO.

Analysis and Interpretation (continued)

Finally, the study team's analysis in this area examined the assumption the district held when seeking an automated system. San Diego assumed that it could hire a vendor to route and schedule students on buses more efficiently than its former manual system. The district, after a very thorough and objective process, considered three vendors seriously, and selected the best of those available. After experiencing a troublesome implementation, learning that ECO can work under certain conditions, and discovering that other districts are experiencing similar problems as San Diego--it is necessary perhaps to examine the basic assumption by restating it in the form of three questions. Can a vendor accomplish what the district desires? Under what conditions can this be accomplished? Is the district willing to operate under these conditions? The analysis up to this point indicates that there may be some instability in the organization of the best of a very small group of potential vendors, that some of the Milwaukee conditions that contribute to their success are not presently in operation here and probably are not attainable, and that even some of the conditions that exist in Dade County--a district not totally committed to ECO--are not present in San Diego. The last question addresses the larger issue of the district's future with ECO, and will be given closer attention in this report's conclusion.

G. STRUCTURE FOR COMMUNICATION

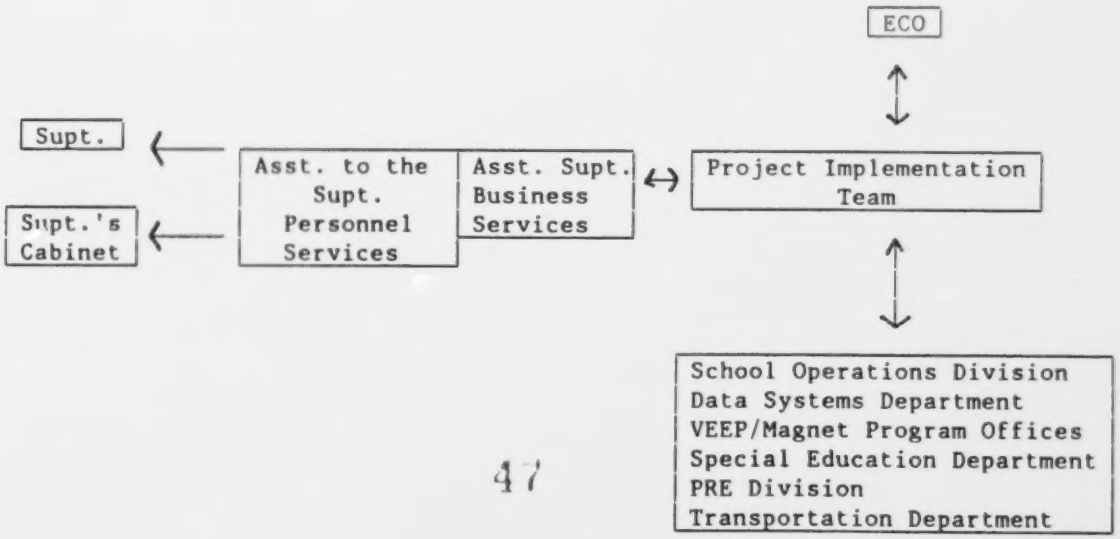
Findings

The eight communication findings identified by the study team include brief explanations, where necessary, to assist the reader in understanding the complex issues involved in interdivisional and interdepartmental communication.

1. Members of the project implementation team and cabinet indicated that board and cabinet reports concerning ECO were overly positive and did not reflect problems and concerns which individuals voiced regarding its implementation. The majority of cabinet members stated that they did not receive an adequate flow of information regarding ECO enabling them to ask appropriate questions and make informed decisions.

2. The study team noted that the reporting responsibilities for this project evolved into a diffuse structure for communication contributing to a lack of systematic response to particular concerns. Diagram A below documents the reporting relationships as described in the superintendent's October 3, 1984 memo naming the project implementation team.

Diagram A



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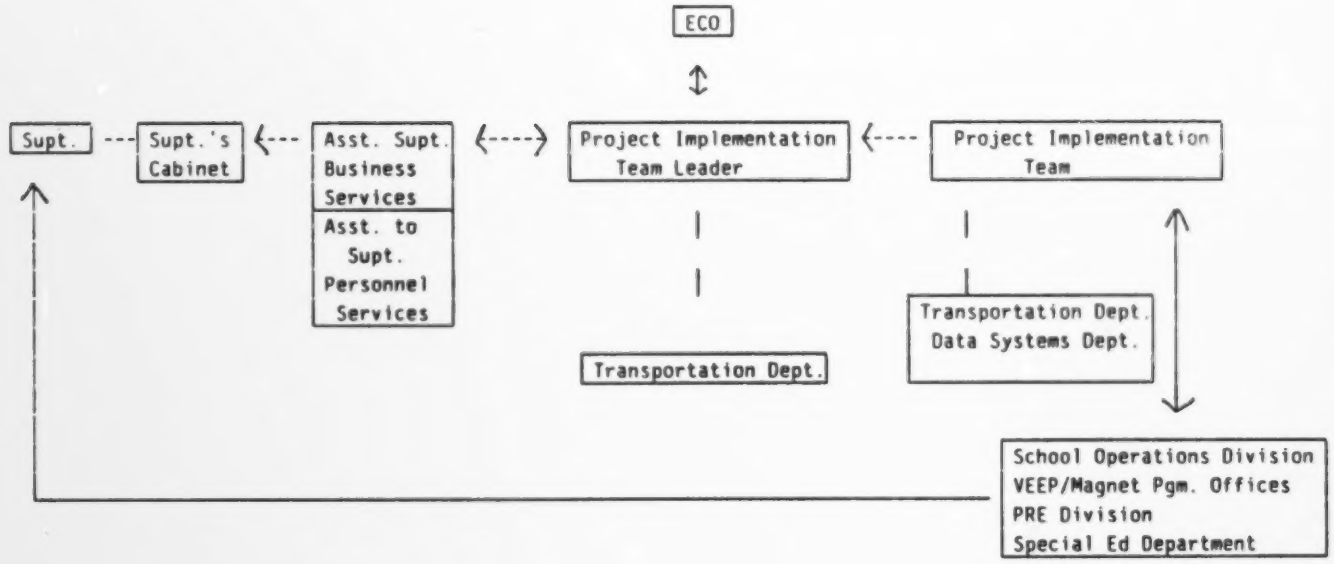
STRUCTURE FOR COMMUNICATION (continued)

Findings (continued)

3. Data from project team and cabinet members indicate that the communication structure during project implementation more closely resembled diagram B. Dotted lines are used to indicate where respondents question whether communication actually occurred.

Diagram B



4. Leadership in Transportation and Data Systems indicated that a systematic method was not established to communicate with the project implementation team and its leadership. The study team also received data that indicated a strained relationship between the project team leader and Transportation department leadership and that this dynamic had a negative effect on communication.

Findings (continued)

5. Respondents indicated that communication on the project team was not structured so that it occurred systematically. Communication depended upon the specific team members' initiative and how they chose to represent their division or department and report pertinent information accordingly. The study team observed that written communication among team members was seldom copied to division or department heads.

6. Most of the cabinet members reported that they shared concerns regarding ECO's implementation directly with the superintendent. It is noted, though, that most of the cabinet did not indicate that they shared the same concerns with individuals directly responsible for ECO's implementation or in an open cabinet meeting. The superintendent acknowledged that concerns regarding the project came to him at different stages of the implementation, yet admitted having difficulty separating the substantive comments from those indicative of personal conflict between individuals and/or a lack of commitment to ECO's implementation.

7. Information provided from staff members within both Data Systems and Transportation indicate internal communication problems exist within both departments. Communication problems within the Transportation department are substantiated from comments and documentation provided by Transportation department staff, and school site administrators and staff. Many sites expressed concern about direct communication with the Transportation department and the difficulties in contacting the appropriate personnel. Several cases document where the appropriate personnel in Transportation were contacted, concerns were raised and no action was taken. Several principals can document situations where promised services or back-up assistance never were delivered. Many site respondents also expressed dissatisfaction with the hotline since it did not meet their needs in an effective and efficient manner.

8. Key personnel at Ecotran Systems, Inc. indicated that the project lacked the formal and informal communication normally present in vendor-client relationships. This included communication regarding the contract, the installation of software and the implementation of the project. ECO staff also reported that a systematic structure for communication while they were on-site in San Diego did not exist. ECO's technical staff expressed concern that access to key district staff responsible for approving certain stages of the project was difficult and contributed to project delays.

Analysis and Interpretation

The findings indicate that the established structure for communication did not work in an effective manner. Information was intended to flow from the project implementation team through the two assistant superintendents responsible for the project to the cabinet and superintendent. There are several possible interpretations as to why communication may have broken down during ECO's implementation. There is strong evidence indicating that a split occurred between the project implementation team and the team's leader. Communication within the project implementation team was not structured systematically. It also is not clear to the study team how conflicts were handled within the project implementation team, especially since conflict was not reflected in the communication of the project team leader. The reports presented to cabinet and the board did not reflect concerns such as enrollment deadlines or students enrolled in programs but not included in the Transportation Enrollment File (TEF). If it is assumed that this information was discussed within the project team, it is not clear why it did not appear on the more formal reports. Either the project team leader or the responsible assistant superintendents did not deem this information as important enough to present with the formal ECO status reports. It is not clear what role the two assistant superintendents played in critically judging the information available to them and in deciding what should be presented to the cabinet and the superintendent.

Cabinet members reported that they did not receive adequate information to make informed and critical judgments concerning ECO. This finding brings into question whether cabinet served as the critical decision making forum as intended in the district's organizational structure. There is no evidence that cabinet members brought their concerns to the assistant superintendents in charge in the formal cabinet setting or in informal meetings or conferences. Rather, several cabinet members brought their concerns directly to the superintendent during scheduled meetings or individual conferences. It is not clear why cabinet members did not pursue their concerns through either informal or formal channels of communication. One interpretation is that cabinet members may have perceived the superintendent's commitment to be such that criticism would not be acceptable in formal settings such as cabinet. Another interpretation is that the assistant superintendents in charge may not have been accommodating to criticisms regarding ECO from their colleagues. A third interpretation for the breakdown of communication within cabinet is that the lack of briefing and understanding of the technological aspects of ECO may have prevented critical discussion among cabinet members. Many organizational concerns were raised by cabinet members in their interviews, yet clear understanding of the technological complexities of the system were not. In the study team's view, cabinet members did not

Analysis and Interpretation (continued)

feel comfortable commenting on ECO without adequate computer expertise or briefing regarding the computerized routing and scheduling system.

It is clear from the interview data that the superintendent received messages from a variety of sources regarding ECO's implementation. Cabinet members brought concerns directly to the superintendent about the project implementation team not meeting project deadlines and the potential problems upon implementation of ECO. These comments were in contrast to what was referred to as rather "rosy" ECO status reports presented by the project team leader and the Business Services Division. The study team found that the superintendent did not address the individual concerns raised to him. One possible explanation for the superindentendent's 'non-response' may be because of the mixed messages he received. The superintendent received both critical messages regarding the difficulties in ECO's implementation from district staff and positive status reports from project leadership. Another interpretation is that his commitment to the project and belief that the system could work may have prevented any critical information about the project from actually being reported to him. Although the commitment is essential to ECO's success, the commitment may have contributed to a loss of perspective that in turn prevented information from being discussed by the cabinet and the superintendent. The study team interprets the superintendent's 'non-response' as his inability to understand and act upon information coming to him that was both conflicting and unsystematic. These features coupled with a commitment to computerized routing and scheduling may have prevented the facilitation of communication by district leaders concerning the actual problems with ECO's implementation.

In retrospect, it may be easy to point out where the superintendent and the cabinet should have responded to communication they received. These concerns raise the larger question of how decision makers decide what is important to listen to when they are responsible for difficult decisions. If the information from project leadership (in this case the assistant superintendents and project implementation leader) is relatively positive while comments received informally are rather negative it may be difficult to take a position that is contrary to the project leadership. Yet, when enough information is available from a variety of sources, a systematic way of investigating their validity may be necessary. Final responsibility for communication rests with project leadership which should express both positive and negative concerns.

Analysis and Interpretation (continued)

Communication was effected in several other aspects of this project. It is not clear to the study team whether all members of the project team truly represented their division or department. The data indicate that communication depended upon the initiative and representativeness of each team member. Communication can easily break down if individuals are not appropriately serving as representatives.

The study team noted what seems to be a strained working relationship between the project team leader and leadership in the Transportation department. The evidence suggests that this dynamic had a negative impact on communication. It is not clear whether the project team leader represented the Transportation department and/or whether there was regular communication between the team leader and Transportation leadership.

Two other areas were noted where communication problems existed. Internal communication within Data Systems and Transportation were highly criticized by respondents in both departments. The evidence suggests that the structure for communication which exists within Data Systems is not effective. Transportation shares the same problem which resulted in a greater impact on sites during the ECO implementation. Many site personnel questioned why Transportation could not solve their problems, resulting in a loss of confidence in the department to provide the service.

In summary, the strained relationships and internal problems contributed to the communication problems evident in ECO's implementation. Communication was not as effective as it could have been with top district leadership, the project implementation team and within the two major departments responsible for ECO's implementation. There are a number of reasons why this may have occurred, several of which are posed in this analysis. The simultaneity of all communication problems created a critical mass that may have precluded communication from becoming one of the vehicles to solve ECO's problems. Since the levels of communication were so interrelated in this case, it is not evident that much could have been done to avoid all three levels from experiencing problems. The lack of an accurate flow of communication allowed decisions and responses to be formed without regard to many of the problems that may have existed.

H. THE DYNAMICS OF LEADERSHIP

Findings

The study team developed seven major findings related to the theme of the dynamics of leadership:

1. The reporting relationships established during implementation of the ECO project (see diagram on Page 50) resulted in multiple leaders on several levels, such as assistant superintendents, directors, and managers; and the exclusion and non-participation of key leaders from the two key implementing departments, Transportation and Data Systems.

2. Key district leaders and project team members identified different people as having primary responsibility for the ECO project.

3. Key district leaders indicated that an assistant superintendent should have had primary responsibility for the project team.

4. Respondents indicated that the leadership of the project team may have prevented the team from accomplishing their task.

5. Cabinet members indicated that they did not receive enough information to make decisions about the ECO project and the information they received was often overly positive with little reference to concerns and problems.

6. Key leadership, including cabinet members, indicated that they informed the superintendent of problems and concerns related to the ECO project beginning in the latter part of the 1984-85 school year.

7. The superintendent played an unusually prominent role in the implementation of the ECO project, particularly at the opening of the 1985-86 school year.

Analysis and Interpretation

These findings focus on the leadership structures established specifically for the implementation of the ECO project and the role of the superintendent in this process. The findings indicate a diffusion of leadership. As a result of this diffusion, the study team questions whether the ECO project functioned with true direction, focus, or coordinated energy.

There is sufficient evidence to suggest that key players in the implementation of the ECO project did not have a clear understanding of who was responsible to whom and for what. The reporting relationships established during implementation of the ECO project (see diagram on Page 50) resulted in multiple leaders on several levels, such as assistant superintendents, managers, and directors; and the exclusion and or non participation of leaders from the key implementing departments Transportation and Data Systems. As implementation of the ECO project was dependent on planning, organization, and adherence to deadlines, the diffusion of leadership did not provide the structure that was necessary to accomplish the task. Specifically, the diffusion resulted from unusual reporting relationships, the numbers of leaders involved, the unclear assignment of authority, the exclusion of key leaders, and the failure to communicate using established networks of communication. (See diagram on Page 50.)

The study team came to the realization that leadership of ECO implementation must be considered at two levels: leadership of the overall project and leadership of the project implementation team. Key district leaders and project team members identified different people as having primary responsibility for the ECO project. The number of different leaders, their particular leadership styles, their enactment of their roles as leaders, and the complexity of their reporting relationships may account for this finding. In addition, the roles and responsibilities of the leaders involved in the project implementation were not clearly communicated to other district leaders.

Key district leaders cited scope, cost, and the logistics involved in implementing the ECO project as reasons for a need for a higher level of leadership for the project team. These respondents indicated that an assistant superintendent should have had primary responsibility for the project team. In fact two managers at the assistant superintendent level were given responsibility for the ECO project implementation team. The assistant superintendent for Business Services and the assistant to the superintendent for Personnel Services were given this responsibility for the team as specified in the superintendent's

Analysis and Interpretation (continued)

memo of October 3, 1984. Even though the study team found that the assistant superintendent for Business Services operationally held primary responsibility for ECO's overall implementation, the study team questions how this operational responsibility was determined from the assignment given in the superintendent's memo. The study team notes, regardless of whether one or two assistant superintendents held primary responsibility, that respondents indicated a need for higher leadership when in fact higher leadership had been assigned.

Further, respondents expressed frustration regarding unresolved concerns and the perceived lack of responsiveness to these concerns on the parts of the assistant superintendents directly responsible. Project team members expressed the opinion that upper management did not take enough of an interest until very late in the implementation phase. Either the two assistant superintendents responsible for the ECO project implementation team did not actively involve themselves in a directive capacity or, to the extent they did so, it was not perceived by others involved in the project. Therefore, it is unclear at what level the authority or decision making occurred and if those making decisions had the sufficient authority to accomplish the task.

A complicating factor, the significance of which is somewhat unclear, is the change in project leadership which occurred after the 1983-84 school year. The assistant director of Transportation was given responsibility for the project team leadership; the assistant superintendent for Business Services and the assistant to the superintendent for Personnel Services were given overall leadership responsibility for the ECO project team. The directors of the Data Systems and Transportation departments (who had been actively involved in the initial stages of the project) were not involved in the leadership structure for the project after the change. The study team recognizes that this exclusion may be related to relieving high level managers from day-to-day responsibilities of a major interdivisional project in addition to their regularly assigned duties. There is sufficient evidence, in the study team's opinion, to suggest that this exclusion may have been related to poor interpersonal relationships. Given the directors initial involvement and subsequent non-involvement, the study team questions what effect this might have had on the overall implementation of ECO especially in light of their positions in the two key implementing departments. Despite representation from the Data Systems and Transportation departments on the project team, the directors of these departments indicated their lack of leadership involvement in the overall implementation of the ECO project.

Analysis and Interpretation (continued)

Also, the diffusion of district leadership may have been further compounded by changes in the management of Ecotran Systems, Inc. Such changes may have contributed to some miscommunication between district leaders and the vendor.

It is within this context of the overall level of leadership that the leadership of the project team will be discussed. Respondents expressed dissatisfaction relating to the leadership style of the project team leader, more specifically, the lack of responsiveness of the team leader to expressed concerns and a seeming unwillingness to listen to problems. The project team indicated concern regarding the lack of planning, communication and organization, such as, the team leader reportedly missed meetings frequently and made unilateral decisions. Because of the project team member's inability to have problems resolved through the project team and its established leadership, they resorted to a variety of means to make their concerns known, "going around" the team leader and reporting concerns to other district leaders. Respondents indicated that the leadership of the project team may have prevented the team from accomplishing their task. One explanation for this finding may be that the project team leader perceived the role of the team as one of education rather than decision making. While the team recognized a need to play a more proactive role in the implementation of the ECO project, for unknown reasons they did not do so. After evidence of serious team leadership problems close to the opening of school, the superintendent appointed a district manager from yet another division to facilitate the project team.

Because the ECO project is a complex and technical project with far reaching effects, the superintendent's cabinet should have been provided with an opportunity for in-depth information about the project. Instead, cabinet members indicated that they did not receive sufficient information to make decisions about the ECO project and the information they received was often overly positive with little reference to concerns and problems. For example, cabinet respondents characterized the reports they received from the assistant superintendent for Business Services and the project team leader as positive, sketchy, and at times, confusing. In retrospect, cabinet members expressed the need to have been better informed in order to have forestalled the problems that arose. This finding draws attention to the nature and purpose of cabinet meetings. The multitude, complexity, and importance of issues requiring resolution within a limited time frame may not be conducive to in-depth examination of issues.

Analysis and Interpretation (continued)

There were attempts, however, made by upper level management to resolve concerns. K leadership, including cabinet members, indicated that they informed the superintendent problems and concerns related to the ECO project beginning in the latter part of t 1984-85 school year. In the superintendent's assessment, these problems and concer appeared to be a result of turf and people problems. In addition, he indicated a fe resistance to the ECO project. It should be noted that upper level management broug these concerns to the superintendent's attention in individual conferences and not cabinet meetings. The study team attributes this manner of reporting concerns to reluctance on the part of cabinet to challenge information or a peer in formal meeting Their reluctance may also be based on a perception they held about the superintendent commitment to an automated system -- a perception which may have discouraged citi problems with the system.

The superintendent stated, and this was supported by respondents, that he attempted separate himself from the ECO selection process. He did so because of his previo association with a district that had acquired the ECO system. The superintende indicated he played a relatively minor role in the early phases of the implementation the ECO project.

Respondents indicated that the superintendent received positive reports from the assista superintendent, Business Services and the project team leader. The superintende expressed that he had felt confident because he believed there was a district back- system for the ECO project. Also, he was aware that ECO had worked in other district Respondents also indicated that the superintendent's confidence in the ECO project proce may have been a factor in his commitment to implementation.

The superintendent played an unusually prominent role in the implementation of the E project, particularly at the opening of the 1985-86 school year. Many cabinet membe supported this finding and indicated it was appropriate given the nature of the situati in which normal processes of district leadership, communication, and reporti responsibilities had broken down. In fact, the superintendent indicated he played larger role than planned in the implementation of the ECO project. He did so because perceived that reporting relationships had broken down and the situation had evolved in a crisis mode. Also, he felt the need to be personally involved because he continued perceive the problem as one that could be resolved provided all concerned work together a com[illegible] effort.

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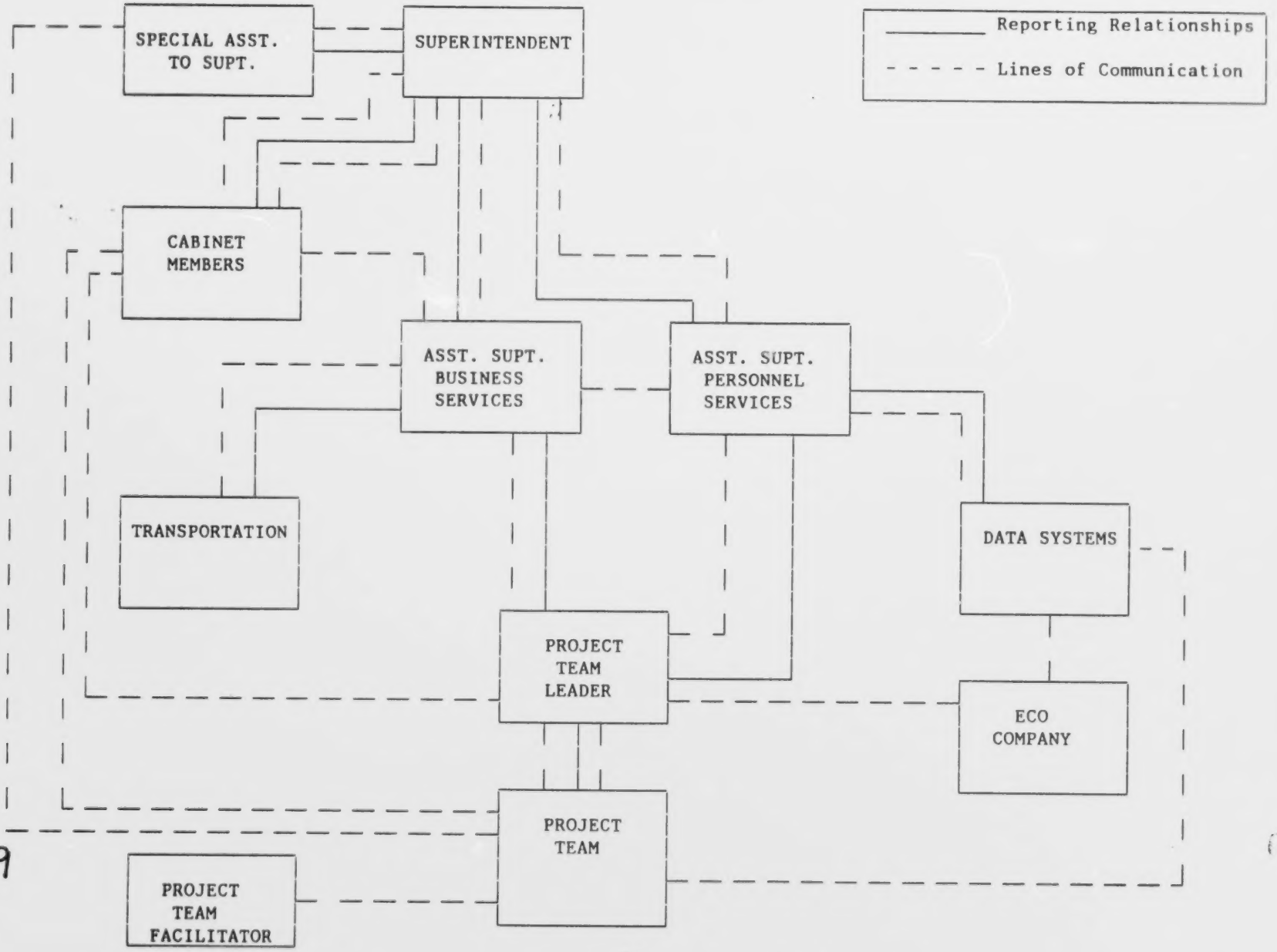
Analysis and Interpretation (continued)

In summary, although the superintendent attempted to identify and solve the problems, his involvement did not bring about resolutions. An explanation for this may include some or all of the following factors: the superintendent's assessment of the source of the expressed problems, positive reports that the system would work, his confidence that there was a back-up system in the event the system did not work, his past experience with the success of the ECO system, and the diffusion of district leadership.

DIFFUSION OF LEADERSHIP AND COMMUNICATION AS RELATED TO ECO IMPLEMENTATION



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I. DELIVERY OF SERVICE: THE SITE PERSPECTIVE

Interviews regarding the delivery of service were conducted at eighteen school sites. The school sites selected represented VEEP, Magnet and Special Education programs. They included elementary, junior high schools, middle schools, senior high schools and atypical schools and were distributed among the four school operation areas of the school district. The major findings from the school sites are as follows:

Findings

1. The majority of the principals expressed dissatisfaction with the opening of the 1985-86 academic school year because of problems related to ECO implementation.

2. The majority of the principals expressed dissatisfaction with the delay in improving service, indicating the persistence of the same problems even after the second school month.

3. Principals expressed relatively simple solutions to problems, such as "upsizing" buses, and yet they were not addressed after repeated requests.

4. Principals indicated an increase in the workload of their staff and themselves because of ECO implementation.

5. All principals indicated that there was an increase in nonapportioned absences at the beginning of the 1985-86 school year.

6. Principals reported that the ECO implementation had a negative impact on integration program enrollments during 1985-86.

7. The majority of the principals questioned a need for bus passes and the work related to the distribution of the ECO-generated bus passes.

8. The majority of the principals expressed dissatisfaction with the hotline as a vehicle for improving service and for communication.

9. Principals expressed dissatisfaction when told that the transportation problems for their particular school were not considered "priority" in the overall district response to ECO problems. They expressed frustration with not knowing how "priority schools" were determined.

DELIVERY OF SERVICE:
THE SITE PERSPECTIVE (continued)

Findings (continued)

10. Principals of schools with special education students expressed concern about the changing of bus drivers.

11. Principals expressed frustration that they could not get their problems solved despite their attempts to communicate in the established process.

12. Principals reported that grading problems resulted from the ECO-related student absences or late arrivals.

13. Principals reported that additional supervision demands resulted from the buses experiencing late and early arrivals.

14. Principals reported that discipline and racial problems resulted from ECO related problems.

15. Principals expressed dissatisfaction with the established seating capacities for buses established by the system.

16. Principals indicated that the quality of service did not improve over prior years.

17. Principals expressed a dissatisfaction with the lack of coordination between the Transportation department and Personnel department in regard to the assignment of bus aides.

Analysis and Interpretation

A new system generally has problems that can be expected the first year of implementation, however this year's problems were extremely severe and continue to exist. One of the main reasons the district automated the routing and scheduling process was to improve the quality of service for the sites. The magnitude of concerns from school sites provides strong evidence that ECO's implementation was not a success. It is also evident that this year's student transportation problems had a significant impact on most aspects of the school program. It should be noted, though, that despite severe ECO related problems, enrollment in the integration programs actually increased for the 1985-86 school year. The problems created a negative impact in the following areas: student performance,

Analysis and Interpretation

attendance, discipline, supervision, and staff work load. These combined factors resulted in increased frustration among school personnel.

This year's implementation was so frustrating for site personnel that it will be very difficult to regain their confidence and commitment to continuing the next school year with ECO. If the district is to continue with ECO, the transportation system will have to provide a service that results in positive benefits for the school sites.

V. STUDY TEAM CONCLUSION AND RECOMMENDATIONS

The study team concludes that there were very few positive aspects of the ECO implementation, from very basic reasons related to rationale for pursuing the system to delivery of service, and including organization process issues as well as very specific ECO related concerns. The two areas of examination which the study team found most compelling related to why the district pursued the system and what benefit the district derived from it. The evidence clearly indicates that the district neither achieved the desired and expected benefits, nor improved the quality of service, and in fact, experienced a deterioration of service. In attempting to understand the problems of the ECO implementation, the study team identified two general contributing factors that prevented the district from resolving the problems as they occurred. These factors were related to organization process and technological issues.

It is important to delineate the technological issues by examining their various dimensions involved in the implementation effort. The first dimension is the assumption that the automated system would improve efficiency and the quality of service. The other dimension relates to who is responsible for providing the technological expertise to solve problems as they arise, and what are the implications when the district relies upon an outside source for the expertise or when no one within the district organization has developed an overall understanding of the system. In the study team's opinion, the technological issues dominate the short term considerations. However the long term process issues must be addressed especially if the district is going to pursue other major interdivisional efforts or projects such as ECO in the future. Given this conclusion, the study team identifies three possible alternatives for the district to pursue in regard to the automated routing and scheduling transportation system.

1. Return to the system which existed prior to ECO's implementation, discontinuing the existing relationship with Ecotran Systems, Inc.

2. Continue with the existing computerized routing and scheduling transportation system implementing the short term recommendations below.

3. Return to the system which existed prior to ECO's implementation, and develop and conduct a small scale pilot of the Ecotran computerized routing and scheduling transportation system to determine if ECO can in fact meet the district's transportation needs while increasing efficiency and improving the quality of service.

STUDY TEAM CONCLUSION
AND RECOMMENDATIONS (continued)

The study team recommends that the district adopt alternative three for the following reasons. First, the district has not realized the desired positive benefits to proceed on course. Second, the district has not determined if in fact the system can achieve improved efficiency and quality of service. Third, as late as December there were still problems with the automated system. The study team emphasizes a commitment to pursuing automation for efficiency and improvement of transportation service only after a systematic process has been employed to determine if in fact the desired benefits can be achieved. While the following recommendations are related specifically to the study team's recommendation to adopt alternative three, the broader application of these recommendations should not be precluded regardless of which alternative is actually adopted. The study team recommends that the district:

Short Term Recommendations

1. Develop a written plan for implementing the transportation system used prior to ECO's implementation by the second semester of the 1985-86 school year. The plan should include descriptions of objectives, activities and tasks, timelines, responsibilities, resources, training, and a system for monitoring progress.

2. Direct the Legal Services office and the Transportation and Data Systems departments to review immediately the existing contract between Ecotran Systems, Inc. and the district to determine if the contractual obligations have been fulfilled.

3. Begin the process of developing a contract for future needs, if it is determined that the district will continue to implement the ECO automated routing and scheduling transportation system, clearly identifying the management person who will be responsible for the negotiation and monitoring of the new contract.

4. Request the district's external auditors (Peat, Marwick and Mitchell) to conduct a financial evaluation of Ecotran Systems, Inc.

5. Develop a plan for conducting a pilot study to determine if the automated routing and scheduling transportation system can produce the benefits desired by the district. The plan should include descriptions of objectives, activities and tasks, timelines, responsibilities, resources, training, and a system for monitoring progress.

STUDY TEAM CONCLUSION
AND RCOMMENDATIONS (continued)

Short Term Recommendations (continued)

6. Assign overall responsibility of the project and its plan to one cabinet member, preferably to the Assistant Superintendent, Business Services.

7. Select a project manager with appropriate leadership, communication, and technical skills who will develop the implementation plan.

8. Appoint an interdivisional project team to implement the plan.

9. Assign the Data Systems and Transportation department directors to the project team.

10. Identify the technical expertise necessary to conduct a pilot.

11. Identify what responsibility the district will assume for the technical expertise that is required to implement the pilot and what the district will expect from the vendor.

12. Reconcile the inconsistency resulting from the current flexible district program enrollment guidelines, policies and procedures with the strict program enrollment deadlines that are required to operate an automated routing and scheduling system.

13. Assign primary responsibility for ownership of the student data base which includes the creation, accuracy, access and monitoring of the data. Primary responsibility for the student data base should be consistent with action taken on the Student Information System Study presented in November 1985 by Deloitte, Haskins and Sells (DH&S). More specifically, if the district implements the DH&S recommendation for site on-line data capability, then the study team recommends that School Operations be assigned primary responsibility for the student data base.

14. Assess the accuracy of the existing student data base.

15. Provide accurate information in a systematic manner that is clearly understood and communicated in the overall implementation plan.

Short Term Recommendations (continued)

16. Evaluate the process of weekly route updates that result in frequent changes in bus drivers.

17. Develop a plan for improved communication between the Transportation department and the school sites.

18. Evaluate the benefits derived from the use of bus passes.

19. Evaluate the district policy for school bus seating capacity.

Long Term Recommendations

The study team recommends that the district:

1. Examine the current process of developing, monitoring and enforcing all district contracts.

2. Consider establishing a contract administration unit.

3. Determine a vendor's organizational stability when undertaking future major interdivisional projects and efforts.

4. Develop and communicate a comprehensive written implementation plan for major interdivisional efforts that includes objectives, activities and tasks, timelines, responsibilities, resources and system for monitoring. This plan must be received and approved by the superintendent's cabinet.

5. Provide the necessary resources for major project implementation, including time, personnel, training, and administration.

6. Select project managers for major interdivisional efforts who have demonstrated effective performance in the following areas: leadership, communication, planning, and project management.

STUDY TEAM CONCLUSION
AND RECOMMENDATIONS (continued)

Long Term Recommendations (continued)

7. Provide training and opportunities for staff to acquire project management skills.

8. Identify the appropriate staff participation for major interdivisional efforts.

9. Develop a process for implementing future technologically-based change efforts. The process should clearly delineate what technical expertise the district will assume and develop, and what will be expected from an outside technical source.

10. Consider forming a nationwide coalition of other similar school districts that are involved in implementing major technological projects such as transportation, and school site access to the student data bases among others. This coalition should be designed to share innovations among its members.

11. Identify, recognize, and resolve the potential programatic, procedural and policy implications that major technological changes will require.

12. Approach future major technological changes, such as the proposed changes in the student data base, with careful planning that reflects an accurate assessment of the district's technological capabilities and limitations.

13. Explore ways of integrating all separate student related data bases, such as the Management Information System, Transportation Enrollment File or Testing data bases, among others, into one student related data base.

14. Develop guidelines for inter- and intra-divisional communication in the implementation of major interdivisional projects.

15. Develop guidelines for committee participation especially as it relates to major interdivisional change efforts.

16. Assign overall responsibility for major interdivisional efforts to an assistant superintendent.

Long Term Recommendations (continued)

17. Identify the leadership role of cabinet members in an interdivisional effort where they do not hold primary responsibility.

18. Ensure that key leaders are not excluded from the leadership in major interdivisional efforts that affect their primary responsibilities.

VI. STUDY TEAM OBSERVATIONS

The study team defined their primary task as the examination of ECO implementation, resulting in recommendations for improvement, and the development of a structural process for implementing major interdivisional change efforts within the district. In completing these responsibilities, the study team made related observations that are included in this section.

A. Hard Work

The study team acknowledges the hard work district staff displayed at the opening of school to address ECO-related problems. This staff response enabled the district to proceed with the ECO implementation as planned despite many problems.

B. Human Dynamics

Several factors in regard to human dynamics and personal relationships had an effect on ECO's implementation. District staff spent many hours trying to solve the problems which arose throughout the implementation process. The long hours contributed to 'staff burnout' especially among those who work at the Transportation bus dispatch bases. Individuals assigned the responsibility to implement ECO were subject to crisis management conditions without much time or relief from the pressures they faced. These conditions had to have an impact on ECO's implementation.

There is some evidence to show that there was a lack of commitment or a felt resistance to the ECO project expressed by some district staff. Although this lack of commitment may be a reflection of only a few individuals, it can have effects on important human dynamics in project implementation. Unless resistance is articulated clearly, a perceived lack of commitment can drive individuals away from the goals of a particular program. This may have been the case in this instance where the same level of commitment may not have been shared by all responsible for ECO's implementation.

B. Human Dynamics (continued)

Negative interpersonal relationships can also affect project implementation. Although it may be quite difficult to improve systematically personal relationships, it is important that an organization address these concerns. It seems evident in ECO's implementation that several reporting relationships evolved because of negative interpersonal relationships between key individuals. The study team questions whether an organization should work around these relationships rather than addressing them directly.

A final factor that may have had an impact on ECO's implementation is one that is difficult to measure among individuals--fear of failure. Concerns regarding the implications of not succeeding may have prevented individuals from reporting information that may not have been as positive as expected. When a system is designed to produce benefits and is unable to do so, it is essential to communicate these concerns. A fear of failure among individuals may not have allowed this level of communication to occur.

C. Implications of Conducting Internal Organizational Studies

The study team identified several implications relating to the conduct of internal organizational studies such as this study by district staff. First, because the district organization does not include an organizational development unit, the conduct of such studies is assigned on an ad hoc basis to existing staff members. Such an assignment is given in addition to regularly assigned responsibilities and may affect the manner and timeliness of how regularly assigned duties are performed.

The internal studies by district staff also have implications for working relationships between those who conduct the studies and their colleagues. This dynamic occurs because organizational studies usually involve collecting a variety of data from a number of sources, which may be related to the job performance of district staff. This information is gathered and reported in as confidential a manner as possible but nevertheless may create a situation which endangers existing or future working relationships between the study team members and the respondents. This consideration is especially significant if personnel changes are made as a result of the organizational study findings or recommendations.

C. Implications of Conducting Internal Organization Studies (continued)

The study team recognizes and acknowledges the positive benefit of self examination for an organization that willingly undertakes such a process. An organization that initiates self examination demonstrates positive organizational health, in the opinion of the study team. In the case of the ECO implementation, the district acknowledged that problems existed and undertook a study to understand the various dimensions of the problems.

A second benefit that the district derives from the internal organization study is the development and utilization of staff expertise. The opportunity for district staff to undertake such assignments expands their knowledge of the organization and its dynamics.

In summary, the district must determine if the positive benefits outweigh the possible negative effects from such internal studies before it undertakes any future internal organizational studies. The basis for making this determination ultimately must consider if the assignment provides a long term benefit that may override negative aspects of the internal study. In the opinion of the study team, the conduct of such studies under existing circumstances may result in temporarily weakening the organization because of team members inability to address regular responsibilities.

D. Independence from the Superintendent

The study team maintained independence from the superintendent in the conduct of this study. This independence contributed to the objectivity and integrity of the study and the study team. The superintendent provided the team with access to appropriate individuals and information but did not influence the manner in which the study data findings were reported and analyzed. The overall conclusion and recommendations were developed by the five-member study team independent of the superintendent.

E. Cabinet Forum

The study team assumes that cabinet exists as the critical administrative decision making forum for the district. Major interdivisional change efforts, such as ECO, can have potential impact on all divisions. The cabinet serves as the vehicle where those with or without primary responsibility for a particular project can express concern about such projects. Throughout this investigation the study team questioned whether critical discussion and analysis regarding ECO actually occurred in cabinet's formal setting. Although the information provided in formal cabinet meetings may not have reflected existing problems, several cabinet members were familiar with the potential negative effects which ECO's implementation eventually encountered. If cabinet is to be effective as a critical forum for interdivisional change efforts, those who are primarily responsible for project implementation must report accurate information, even when negative, and be willing to educate their colleagues. At the same time, those who do not have primary responsibility must be willing to serve as critical analysts of particular projects and actually share in the overall responsibility of major interdivisional efforts. The constructive criticism necessary for the ECO implementation processes did not occur in cabinet meetings. Cabinet must determine why this occurred and how it, as a forum, can prevent a similar situation from occurring in the future.

F. Transportation Department

Although the primary focus of this study related to the implementation of ECO and not to the structure and organization of the Transportation department, evidence came to the attention of the study team that indicates a need to examine the existing organization and operation of the department. Data revealed that organizational and human dynamic problems exist in the department, and that these concerns may not be a result of the ECO implementation.

G. Special Education

The Special Education department needs to evaluate several areas that have potential implications for their transportation requirements. These factors include: 1) the necessity of providing doorstop service to all students that receive it; 2) transporting students to specific sites versus providing more special education facilities and teachers throughout the district; and 3) assessing whether three year reviews of Special Education students effectively determine if some students can exit these programs. The policy and budget implications of pursuing any of these options are unclear at this time.

H. Cooperation Afforded Study Team

The study team acknowledges the cooperation they received from district and nondistrict participants in the study. This cooperation enabled the team to collect the necessary data which resulted in the study's findings, analyses, conclusion, and recommendations.

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

INTERVIEW PROTOCOLS

January 7, 1986

HISTORICAL DATA QUESTIONS

1. When and why did our district become interested in an automated routing and scheduling transportation system?

2. Who and how many people were involved in researching the acquisition of the new automated routing and scheduling transportation system? Who had primary responsibility?

3. What process was used to determine whether or not the district should acquire the new system?

4. What task forces, committees, and groups were formed during the selection and implementation of the new system?

5. Who appointed the groups, what charge did they receive, and how was the charge communicated to them?

6. What formal reporting process did these groups have?

COMMUNICATION DATA QUESTIONS

1. Was there (is there) a plan for communication, regarding the ECO implementation? If so, what was it?

2. How did you get your information about implementing the system?

3. Did any information come to you that indicated there were problems? If so, how did you respond?

4. Was there a systematic way of responding to problems brought to your attention? If there was no response (or if you did not respond) why is this the case?

5. How was conflict handled throughout the ECO implementation problems?

LEADERSHIP DATA QUESTIONS

1. Who has primary responsibility for the implementation of the automated routing and scheduling transportation system?

2. Who made the decisions to acquire and implement the system?

3. What was (is) the decision-making process directing "day-to-day" decisions and operations of the system?

4. When problem situations arose, who took responsibility, and how were they resolved?

5. How were decisions regarding specific problems or situations reported? To whom were they reported?

6. What reporting responsibilities grew out of the entire ECO project?

7. Who was the district liaison with Ecotran Systems, Inc.? How was information reported by the liaison?

8. What responsibilities did you and your division have in the ECO implementation?

9. What role did the superintendent play in the ECO selection and implementation?

TECHNOLOGY QUESTIONS

1. Is the automated system necessary?
2. Who was assigned the responsibility to develop the RFP for the automated routing and scheduling transportation system?
3. Did decision makers have enough technological knowledge to make decisions?
4. What is the difference between the manual (old) and automated (new) system?
5. How were the various data bases used in the former system?
6. How are the various data bases used in the new system?
7. Does the district have the necessary technology to implement ECO?
8. Is ECO the best system available today?
9. Is ECO worth the effort, resources, etc., needed to implement it?
10. Could we use our "on line" system as it is? What would it take?
11. What needs to be adjusted before March 1, 1986, to make ECO work for 1986-87?
12. Describe the process it takes to get a special education student on the bus under the new system.
13. Describe the process it takes to get a magnet/VEEP student on the bus under the new system.

INTERDIVISIONAL QUESTIONS

1. What role did the project team have in the ECO implementation?

2. What role did the Cabinet play in the ECO acquisition and implementation?

3. Were there any turf issues in implementing ECO?

4. How would you characterize the involvement of Personnel Division, Operations, Business Services, Educational Services, Finance, and Planning, Research, and Evaluation in the acquisition and implementation of ECO?

5. Would you feel comfortable reporting a major problem area to Cabinet even if it existed outside of your division and responsibility?

6. Do you feel comfortable engaging in critical discussion or disagreement with a Cabinet level colleague or in a Cabinet meeting? If yes, how does Cabinet resolve disagreement? If not, why not?

7. What sort of forum is Cabinet?

8. Does Cabinet get enough information from other divisions to make decisions affecting other divisions?

9. How did the divisions communicate with each other regarding the ECO situation? How did individual departments communicate regarding the same?

RESOURCES QUESTIONS

1. Did the district do sufficient cost/benefit analysis before acquiring ECO?
2. Who was involved in the cost/benefit analysis?
3. Does the contract allow us to buy the system?
4. How much have we spent on the system over the last three years?
5. Will it take more financial and human resources to make it work as planned?
6. Are the district data bases compatible with ECO?
7. Has Ecotran Systems, Inc. fulfilled their contractual agreements?

PRINCIPALS' PROTOCOL

1. How did the ECO implementation affect this year's opening of school?
2. How did you get information about ECO during the first month of school?
3. Did your non-apportioned absences increase in the first month of 1985-86 and how much?
4. How does this year's quality of transportation service compare to last year?
5. Has the quality of transportation service improved since the third week of school?
6. How were school site personnel involved in the selection of ECO?
7. Did site personnel need to be more involved in the selection and implementation of ECO?
8. As you identified transportation problems or special needs, how were they handled?
9. What transportation materials (bus passes, manifests) do you receive weekly and how helpful are they?
10. Has the workload increased at your school due to the ECO implementation?
11. What are the benefits school sites and students derived from ECO?
12. How would you improve the current transportation system?

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

APPENDI

ECOSYSTEMS SURVEY REPORT

January 7, 1986

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

APPENDIX B

ECOSYSTEMS SURVEY REPORT

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SAN DIEGO UNIFIED SCHOOL DISTRICT
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DESCRIPTION OF ECOSYSTEMS SURVEY

The Superintendent appointed a task force to study the implementation of the Ecosystems computerized routing and scheduling system.

A survey entitled "Ecosystems Implementation Survey" was distributed to all of the Superintendent's Cabinet, selected Transportation Department personnel, selected Data Systems Department personnel and all of the Project Team. The survey consisted of 22 questions concerning the technical aspects of the implementation of Ecosystems. These questions were given a "Yes", "No", or "Don't Know" response. A "Yes" response was to include any pertinent documents. Space was allowed for comments

SAN DIEGO UNIFIED SCHOOL DISTRICT
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TABULATION OF SURVEY RESULTS

A survey entitled "Ecosystems Implementation Survey" was distributed to all of the Superintendent's Cabinet, selected Transportation Department personnel, selected Data Systems Department personnel and all of the Project Team. The survey consisted of 22 questions concerning the technical aspects of the implementation of the Ecosystem. Thirty five responses were received and tabulated by computer.

Respondents were asked to answer the questions by checking "Yes", "No" or "Don't know" and making any comments they felt necessary to explain their answer. In some instances, questions received both a "Yes" and "No" response and a "No" and "Don't Know" response. These responses were tabulated as they were received.

The Survey Results were tabulated as shown on the following tables:

Table 1 - Survey Results by "Yes", "No", and "Don't know" for all questions by number of total responses. Questions are sequenced in the same order as the survey questionnaire.

Table 2 - Survey Results by highest number of "Yes" responses ranked according to the question receiving the highest number of "Yes" responses.

Table 3 - Survey Results by number of "No" responses ranked according to the question receiving the highest number of "No" responses.

Table 4 - Survey Results by highest number of "Don't Know" responses ranked according to the question receiving the highest number of "Don't Know" responses.

Table 5 - Survey Results by Personnel Groups - Cabinet Members, Transportation Department, Data Systems Department and Project Team. Questions are sequenced in the same order as the survey questionnaire and indicates the "Yes", "No", and "Don't Know" responses from each group as well as the total responses.

Key findings are presented in front of each table. A summary of the selected comments extracted from the survey responses follows Table 5.

TABLE 1

SURVEY RESULTS BY "YES", "NO", OR "DON'T KNOW"

FOR ALL QUESTIONS

Introduction: Table 1 shows questions sequenced in the same order as the survey questionnaire. Table 1 shows (1) the number of the question (2) the question, (3) the total number of responses, (4) the total number of "yes" responses (5) the total number of "no" responses and (6) the total number of "don't know" responses.

In some instances, questions received both a "yes" and "no" response or a "no" and "don't know" response. These responses were tabulated as they were received.

1 Number	2 Question	3 Total Responses	4 Yes	5 No	6 Don't Know
1	Was there adequate documented information concerning the manual scheduling systems to facilitate design of the new computerized system?	35	6	8	21
2	Are the scope and objectives of implementing the computerized system documented and complete?	36	7	14	15
3	Is there a clear description of data requirements necessary to operate the computerized student transportation system?	35	4	16	15
4	Are required resources (hardware, software, personnel) necessary to operate a computerized system documented?	36	6	12	18
5	Was the responsibility of personnel engaged in various phases of Ecosystems' development and implementation defined in advance?	36	5	21	10
6	Were individual responsibilities assigned to specific individuals in the conversion from the manual system to Ecosystems?	35	12	12	11
7	Was a plan developed for converting data files from the manual system to the new computerized system?	35	10	4	21
8	Prior to Ecosystems implementation were data systems and transportation personnel given sufficient training to carry out their responsibilities in the use of the new system?	35	3	23	9
9	Is there a macro-level block diagram or flowchart of the student transportation processes to outline pictorially the sequence of the data processing steps?	35	3	10	22
10	Was the prior performance of the Ecosystems routing and scheduling system evaluated by transportation and data system personnel to determine if the system meets district needs?	35	12	4	19
11	Has documentation been prepared explaining Ecosystems operating instructions and procedures necessary for the operation of the system?	35	11	10	14

ECOSYSTEM SURVEY

TABLE 1

SURVEY RESULTS BY "YES", "NO", "OR DON'T KNOW"
FOR ALL QUESTIONS

1	2	3	4	5	6
Number	Question	Total Responses	Yes	No	Don't Know
12	Was an individual at an appropriate level given overall responsibility for the successful development and implementation of Ecosystems?	35	22	8	5
13	Was there an implementation plan developed for Ecosystems?	35	12	8	15
14	Was there a management system developed for Ecosystems?	36	9	8	19
15	Were cost projections established and monitored for the Ecosystems routing and scheduling system?	36	7	5	24
16	Was a formal reporting mechanism created to provide district management with status reports on Ecosystems development progress?	35	12	9	14
16a	If yes, did the reporting structure include sufficient levels of district management to ensure that necessary corrective actions were taken?	12	3	7	2
17a	Does documentation exist in the following areas: flow charts showing the sequence of data processing steps?	35	6	6	23
17b	Does documentation exist in the following areas: flow of transactions through the system?	35	8	5	22
17c	Does documentation exist in the following areas: files maintained by the system?	35	7	3	25
17d	Does documentation exist in the following areas: programs used to maintain the files?	35	6	2	27
18	Can Ecosystem accommodate the necessary changes to operate the computerized scheduling and routing system by March 1 to meet the needs of the 1986-87 school year?	35	3	7	25
19	Has an Ecosystems' cost/benefit analysis been developed that will measure the guarantees in the contractual agreement with the district?	35	1	4	30
20	Were the Ecosystem users (in transportation and data systems) involved adequately in Ecosystem's development?	36	4	20	12
21	Have Data Systems personnel shown commitment to Ecosystems?	37	15	4	18
22	Have Transportation personnel shown commitment to Ecosystems?	38	16	8	14

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TABLE 2

In referring to table 2, a "Yes" response indicates this action was taken. Key findings include:

63% (22 of 35) of the respondents agreed that an individual at an appropriate level was given overall responsibility for the successful development and implementation of Ecosystems.

42% (16 of 38) of the respondents agreed that Transportation personnel had shown a commitment to Ecosystems.

41% (15 of 37) of the respondents agreed that Data Systems had shown a commitment to Ecosystems.

34% or less of the respondents indicated a positive response to the remaining questions.

34% of the respondents indicated there was an implementation plan developed for Ecosystems.

25% of the respondents indicated that there was a management system developed for Ecosystems.

14% of the respondents indicated that the responsibility of personnel engaged in various phases of Ecosystems' development and implementation was defined in advance.

8% of the respondents indicated that the Ecosystems can accommodate the necessary changes to operate the computerized scheduling and routing system by March 1, 1986 to meet the needs of the 1986-87 school year.

TABLE 2

SURVEY RESULTS BY HIGHEST NUMBER OF "YES" RESPONSES

Introduction: Table 2 shows questions ranked or sequenced that received the highest number of "Yes" responses. Items which are tied in Column 4 are given the same rank order in Column 1.

Table 2 shows (1) rank order of question, (2) the question, (3) total responses, (4) total "Yes" responses, (5) total "No" responses, and (6) total "Don't Know" responses.

1 Rank	2 Question	3 Total Responses	4 Yes	5 No	6 Don't Know
1	Was an individual at an appropriate level given overall responsibility for the successful development and implementation of Ecosystems?	35	22	8	5
2	Have Transportation personnel shown commitment to Ecosystems?	38	16	8	14
3	Have Data Systems personnel shown commitment to Ecosystems?	37	15	4	18
4	Were individual responsibilities assigned to specific individuals in the conversion from the manual system to Ecosystems?	35	12	12	12
4	Was the prior performance of the Ecosystems routing and scheduling system evaluated by transportation and data system personnel to determine if the system meets district needs?	35	12	4	19
4	Was there an implementation plan developed for Ecosystems?	35	12	8	15
4	Was a formal reporting mechanism created to provide district management with status reports on Ecosystems development progress?	35	12	9	14
5	Has documentation been prepared explaining Ecosystems operating instructions and procedures necessary for the operation of the system?	35	11	10	14
6	Was a plan developed for converting data files from the manual system to the new computerized system?	35	10	4	21
7	Was there a management system developed for Ecosystems?	36	9	8	19
8	Does documentation exist in the following areas: flow of transactions through the system?	35	8	5	22
9	Are the scope and objectives of implementing the computerized system documented and complete?	36	7	14	15
9	Were cost projections established and monitored for the Ecosystems routing and scheduling system?	36	7	5	24
9	Does documentation exist in the following areas: files maintained by the system?	35	7	3	25

ECOSYSTEM SURVEY

TABLE 2

SURVEY RESULTS BY HIGHEST NUMBER
OF "YES" RESPONSES

1 Rank	2 Question	3 Total Responses	4 Yes	5 No	6 Don't Know
10	Was there adequate documented information concerning the manual scheduling systems to facilitate design of the new computerized system?	35	6	8	21
10	Are required resources (hardware, software, personnel) necessary to operate a computerized system documented?	36	6	12	18
10	Does documentation exist in the following areas: flow charts showing the sequence of data processing steps?	35	6	6	23
10	Does documentation exist in the following areas: programs used to maintain the files?	35	6	2	27
11	Was the responsibility of personnel engaged in various phases of Ecosystems' development and implementation defined in advance?	36	5	21	10
12	Is there a clear description of data requirements necessary to operate the computerized student transportation system?	35	4	16	15
12	Were the Ecosystem users (in transportation and data systems) involved adequately in Ecosystem's development?	36	4	20	12
13	Prior to Ecosystems implementation were data systems and transportation personnel given sufficient training to carry out their responsibilities in the use of the new system?	35	3	23	9
13	Is there a macro-level block diagram or flowchart of the student transportation processes to outline pictorially the sequence of the data processing steps?	35	3	10	22
13	If yes, did the reporting structure include sufficient levels of district management to ensure that necessary corrective actions were taken?	12	3	7	2
13	Can Ecosystem accommodate the necessary changes to operate the computerized scheduling and routing system by March 1 to meet the needs of the 1986-87 school year?	35	3	7	25
14	Has an Ecosystems' cost/benefit analysis been developed that will measure the guarantees in the contractual agreement with the district?	35	1	4	30

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TABLE 3

In referring to table 3, a "No" response indicates this action was not taken.

66% (23 of 35) of the respondents indicated a negative response to the question; Prior to Ecosystems implementation, were data systems and transportation personnel given sufficient training to carry out their responsibilities in the use of the new system?

58% (21 of 36) of the respondents indicated a negative response to the question; Was the responsibility of personnel engaged in various phases of Ecosystems' development and implementation defined in advance?

56% (20 of 36) of the respondents indicated a negative response to the question; Were the Ecosystem users (in transportation and data systems) involved adequately in Ecosystem's development?

46% or less of the respondents indicated a negative response to the remaining questions.

39% of the respondents indicated a negative response the the question; Are the scope and objectives of implementing the computerized system documented and complete?

34% of the respondents indicated a negative response to the question; Is there a clear description of data requirements necessary to operate the computerized student transportation system?

TABLE 3

SURVEY RESULTS BY HIGHEST NUMBER OF "NO" RESPONSES

Introduction: Table 3 shows questions ranked or sequenced that received the highest number of "No" responses. Items which are tied in Column 5 are given the same rank order in Column 1.

Table 3 shows (1) rank order of question, (2) the question, (3) total responses, (4) total "Yes" responses, (5) total "No" responses, and (6) total "Don't Know" responses.

1 Rank	2 Question	3 Total Responses	4 Yes	5 No	6 Don't Know
1	Prior to Ecosystems implementation were data systems and transportation personnel given sufficient training to carry out their responsibilities in the use of the new system?	35	3	23	9
2	Was the responsibility of personnel engaged in various phases of Ecosystems' development and implementation defined in advance?	36	5	21	10
3	Were the Ecosystem users (in transportation and data systems) involved adequately in Ecosystem's development?	36	4	20	12
4	Is there a clear description of data requirements necessary to operate the computerized student transportation system?	35	4	16	15
5	Are the scope and objectives of implementing the computerized system documented and complete?	36	7	14	15
6	Are required resources (hardware, software, personnel) necessary to operate a computerized system documented?	36	6	12	18
6	Were individual responsibilities assigned to specific individuals in the conversion from the manual system to Ecosystems?	35	12	12	11
7	Is there a macro-level block diagram or flowchart of the student transportation processes to outline pictorially the sequence of the data processing steps?	35	3	10	22
7	Has documentation been prepared explaining Ecosystems operating instructions and procedures necessary for the operation of the system?	35	11	10	14
8	Was a formal reporting mechanism created to provide district management with status reports on Ecosystems development progress?	35	12	9	14
9	Was there adequate documented information concerning the manual scheduling systems to facilitate design of the new computerized system?	35	6	8	21
9	Was an individual at an appropriate level given overall responsibility for the successful development and implementation of Ecosystems?	35	22	8	5

ECOSYSTEM SURVEY

TABLE 3

SURVEY RESULTS BY HIGHEST NUMBER
OF "NO" RESPONSES

1 Rank	2 Question	3 Total Responses	4 Yes	5 No	6 Don't Know
9	Was there an implementation plan developed for Ecosystems?	35	12	8	15
9	Was there a management system developed for Ecosystems?	36	9	8	19
9	Have Transportation personnel shown commitment to Ecosystems?	38	16	8	14
10	If yes, did the reporting structure include sufficient levels of district management to ensure that necessary corrective actions were taken?	12	3	7	2
10	Can Ecosystem accommodate the necessary changes to operate the computerized scheduling and routing system by March 1 to meet the needs of the 1986-87 school year?	35	3	7	25
11	Does documentation exist in the following areas: flow charts showing the sequence of data processing steps	35	6	6	23
12	Were cost projections established and monitored for the Ecosystems routing and scheduling system?	36	7	5	24
12	Does documentation exist in the following areas: flow of transactions through the system?	35	8	5	22
13	Was a plan developed for converting data files from the manual system to the new computerized system?	35	10	4	21
13	Was the prior performance of the Ecosystems routing and scheduling system evaluated by transportation and data system personnel to determine if the system meets district needs?	35	12	4	19
13	Has an Ecosystems' cost/benefit analysis been developed that will measure the guarantees in the contractual agreement with the district?	35	1	4	30
13	Have Data Systems personnel shown commitment to Ecosystems?	37	15	4	18
14	Does documentation exist in the following areas: files maintained by the system?	35	7	3	25
15	Does documentation exist in the following areas: programs used to maintain the files?	35	6	2	27

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TABLE 4

In referring to table 4 a "Don't Know" response indicates a lack of knowledge regarding significant factors in the implementation of the Ecosystem.

86% (30 of 35) of the respondents indicated a "Don't Know" response to the question; Has an Ecosystems' cost/benefit analysis been developed that will measure the guarantees in the contractual agreement with the district?

77% (27 of 35) of the respondents indicated a "Don't Know" response to the question; Does documentation exist in the following areas: programs used to maintain the files?

71% (25 of 35) of the respondents indicated a "Don't Know" response to the question; Does documentation exist in the following areas: files maintained by the system?

Greater than half (14 of 22) of the survey questions received a "Don't Know" response of 50% or more.

TABLE 4

SURVEY RESULTS BY HIGHEST NUMBER OF "DON'T KNOW" RESPONSES

Introduction: Table 4 shows questions ranked or sequenced that received the highest number of "Don't Know" responses. Items which are tied in Column 6 are given the same rank order in Column 1.

Table 4 shows (1) rank order of question, (2) the question, (3) total responses, (4) total "Yes" responses, (5) total "No" responses, and (6) total "Don't Know" responses.

1 Rank	2 Question	3 Total Responses	4 Yes	5 No	6 Don't Know
1	Has an Ecosystems' cost/benefit analysis been developed that will measure the guarantees in the contractual agreement with the district?	35	1	4	30
2	Does documentation exist in the following areas: programs used to maintain the files?	35	6	2	27
3	Does documentation exist in the following areas: files maintained by the system?	35	7	3	25
3	Can Ecosystem accommodate the necessary changes to operate the computerized scheduling and routing system by March 1 to meet the needs of the 1986-87 school year?	35	3	7	25
4	Were cost projections established and monitored for the Ecosystems routing and scheduling system?	36	7	5	24
5	Does documentation exist in the following areas: flow charts showing the sequence of data processing steps?	35	6	6	23
6	Is there a macro-level block diagram or flowchart of the student transportation processes to outline pictorially the sequence of the data processing steps?	35	3	10	22
6	Does documentation exist in the following areas: flow of transactions through the system?	35	8	5	22
7	Was there adequate documented information concerning the manual scheduling systems to facilitate design of the new computerized system?	35	6	8	21
7	Was a plan developed for converting data files from the manual system to the new computerized system?	35	10	4	21
8	Was the prior performance of the Ecosystems routing and scheduling system evaluated by transportation and data system personnel to determine if the system meets district needs?	35	12	4	19
8	Was there a management system developed for Ecosystems?	36	9	8	19

TABLE 4

SURVEY RESULTS BY HIGHEST NUMBER
OF "DON'T KNOW" RESPONSES

1	2	3	4	5	6
Rank	Question	Total Responses	Yes	No	Don't Know
9	Are required resources (hardware, software, personnel) necessary to operate a computerized system documented?	36	6	12	18
9	Have Data Systems personnel shown commitment to Ecosystems?	37	15	4	18
10	Are the scope and objectives of implementing the computerized system documented and complete?	36	7	14	15
10	Is there a clear description of data requirements necessary to operate the computerized student transportation system?	35	4	16	15
10	Was there an implementation plan developed for Ecosystems?	35	12	8	15
11	Has documentation been prepared explaining Ecosystems operating instructions and procedures necessary for the operation of the system?	35	11	10	14
11	Was a formal reporting mechanism created to provide district management with status reports on Ecosystems development progress?	35	12	9	14
11	Have Transportation personnel shown commitment to Ecosystems?	38	16	8	14
12	Were the Ecosystem users (in transportation and data systems) involved adequately in Ecosystem's development?	36	4	20	12
13	Were individual responsibilities assigned to specific individuals in the conversion from the manual system to Ecosystems?	35	12	12	11
14	Was the responsibility of personnel engaged in various phases of Ecosystems' development and implementation defined in advance?	36	5	21	10
15	Prior to Ecosystems implementation were data systems and transportation personnel given sufficient training to carry out their responsibilities in the use of the new system?	35	3	23	9
16	Was an individual at an appropriate level given overall responsibility for for the successful development and implementation of Ecosystems?	35	22	8	5
17	If yes, did the reporting structure include sufficient levels of district management to ensure that necessary corrective actions were taken?	12	3	7	2

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TABLE 5

In referring to table 5, the responses are identified by personnel groups, Superintendent's Cabinet Members, Transportation, Data Systems and Project Team Personnel.

The "Yes" response analysis to the questions by Personnel Group follows the statement of the question.

Question: Was an individual at an appropriate level given overall responsibility for the successful development and implementation of Ecosystems?

Response:
Cabinet Members, 39% (5 of 13)
Transportation, 92% (11 of 12)
Data Systems, 100% (4 of 4)
Project Team, 66% (2 of 3)
All Responses, 63% (22 of 35)

Question: Was there an implementation plan developed for Ecosystems?

Response:
Cabinet Members, 39% (5 of 13)
Transportation, 42% (5 of 12)
Data Systems, 0% (0 of 4)
Project Team, 33% (2 of 6)
All Responses, 34% (12 of 35)

Question: Was there a management system developed for Ecosystems?

Response:
Cabinet Members, 15% (2 of 13)
Transportation, 25% (3 of 12)
Data Systems, 25% (1 of 4)
Project Team, 43% (3 of 7)
All Responses, 25% (9 of 36)

TABLE 5 (continued)

Question: Was a formal reporting mechanism created to provide district management with status reports on Ecosystems development progress?

Response:
Cabinet Members,	38% (5 of 13)
Transportation,	8% (1 of 12)
Data Systems,	50% (2 of 4)
Project Team,	66% (4 of 6)
All Responses,	34% (12 of 35)

Question: Can Ecosystem accommodate the necessary changes to operate the computerized scheduling and routing system by March 1 to meet the needs of the 1986-87 school year?

Response:
Cabinet Members,	8% (1 of 13)
Transportation,	8% (1 of 12)
Data Systems,	0% (0 of 4)
Project Team,	17% (1 of 6)
All Responses,	9% (3 of 35)

TABLE 5

SURVEY RESULTS BY PERSONNEL GROUPS

Introduction: Table 5 shows questions sequenced in the same order as the survey questionnaire. Responses were received from the Superintendent's Cabinet, Transportation Department, Data Systems Department, and the Project Team.

Table 5 includes (1) the number of the question, (2) the question, (3) through (5) the responses from each group showing the number of "Yes", "No", and "Don't Know" responses, and (6) the total number of responses to each question.

1	2	3 Cabinet			4 Transp			5 Data Systems			6 Project Team			7 TOTAL			
Number	Question	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	Total
1	Was there adequate documented information concerning the manual scheduling systems to facilitate design of the new computerized system?	1	3	9	3	1	8	2	1	1	0	3	3	6	8	21	35
2	Are the scope and objectives of implementing the computerized systems documented and complete?	3	3	7	2	4	6	0	3	1	2	4	1	7	14	15	36
3	Is there a clear description of data requirements necessary to operate the computerized student transportation system?	1	5	7	2	3	7	1	3	0	0	5	1	4	16	15	35
4	Are required resources (hardware, software, personnel) necessary to operate a computerized system documented?	2	3	8	3	1	8	0	3	1	1	5	1	6	12	18	36
5	Was the responsibility of personnel engaged in various phased of Ecosystems' development and implementation defined in advance?	2	7	4	2	5	5	0	3	1	1	6	0	5	21	10	36
6	Were individual responsibilities assigned to specific individuals in the conversion from the manual system to Ecosystems?	4	3	6	6	2	4	1	2	1	1	5	0	12	12	11	35
7	Was a plan developed for converting data files from the manual system to the new computerized system?	2	0	11	5	0	7	1	2	1	2	2	2	10	4	21	35
8	Prior to Ecosystems implementation were data systems and transportation personnel given sufficient training to carry out their responsibilities in the use of the new system?	0	4	9	2	10	0	0	4	0	1	5	0	3	23	9	35
9	Is there a macro-level block diagram or flowchart of the student transportation processes to outline pictorially the sequence of the data processing steps?	0	3	10	3	2	7	0	3	1	0	2	3	3	10	22	35
10	Was the prior performance of the Ecosystems routing and scheduling system evaluated by transportation and data system personnel to determine if the system meets district needs?	3	0	10	4	2	6	2	1	1	3	1	2	12	4	19	35
11	Has documentation been prepared explaining Ecosystems operating instructions and procedures necessary for the operation of the system?	3	4	6	5	2	5	1	2	1	2	2	2	11	10	14	35

TABLE 5

SURVEY RESULTS BY PERSONNEL GROUPS

1	2	3 Cabinet			4 Transp			5 Data Systems			6 Project Team			7 TOTAL			
Number	Question	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	Yes	No	Don't Know	Total
12	Was an individual at an appropriate level given overall responsibility for the successful development and implementation of Ecosystems?	5	5	3	11	0	1	4	0	0	2	3	0	22	8	5	35
13	Was there an implementation plan developed for Ecosystems?	5	2	6	5	0	7	0	2	2	2	4	0	12	8	15	35
14	Was there a management system developed for Ecosystems?	2	3	8	3	0	9	1	2	1	3	3	1	9	8	19	36
15	Were cost projections established and monitored for the Ecosystems routing and scheduling system?	3	2	9	2	1	9	0	1	3	2	1	3	7	5	24	36
16	Was a formal reporting mechanism created to provide district management with status reports on Ecosystems development progress?	5	4	4	1	2	9	2	1	1	4	2	0	12	9	14	35
16a	If yes, did the reporting structure include sufficient levels of district management to ensure that necessary corrective actions were taken?	2	2	1	0	0	1	0	2	0	1	3	0	3	7	2	12
17a	Does documentation exist in the following areas: flow charts showing the sequence of data processing steps?	1	0	12	4	1	7	0	2	2	1	3	2	6	6	23	35
17b	Does documentation exist in the following areas: flow of transactions through the system?	2	0	11	4	1	7	0	2	2	2	2	2	8	5	22	35
17c	Does documentation exist in the following areas: files maintained by the system?	2	0	11	3	0	9	0	2	2	2	1	3	7	3	25	35
17d	Does documentation exist in the following areas: programs used to maintain the files?	2	0	11	2	0	10	0	1	3	2	1	3	6	2	27	35
18	Can Ecosystem accommodate the necessary changes to operate the computerized scheduling and routing system by March 1 to meet the needs of the 1986-87 school year?	1	1	11	1	3	8	0	1	3	1	2	3	3	7	25	35
19	Has an Ecosystems' cost/benefit analysis been developed that will measure the guarantees in the contractual agreement with the district?	1	0	12	0	0	12	0	0	4	0	4	2	1	4	30	35
20	Were the Ecosystem users (in transportation and data systems) involved adequately in Ecosystem's development?	2	4	7	1	8	4	0	4	0	1	4	1	4	20	12	36
21	Have Data Systems personnel shown commitment to Ecosystems?	5	2	6	2	0	10	3	0	1	5	2	1	15	4	18	37
22	Have Transportation personnel shown commitment to Ecosystems?	2	1	10	8	3	2	3	0	1	3	4	0	16	8	14	38

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

SUMMARY OF SELECTED COMMENTS EXTRACTED FROM
ECOSYSTEMS IMPLEMENTATION SURVEY

QUESTION 1: Was there adequate documented information concerning the manual scheduling system to facilitate design of the new computerized system?

The new system was not meant to be patterned after the "manual scheduling system." However, the contract (with attachments) contained adequate information about what the district wanted in the new system.

Yes - This information was identified in the RFP.

No - The process within transportation is still not well documented. The process for schools, parents and programs to follow in interfacing with Transportation was not documented at all!

QUESTION 2: Are the scope and objectives of implementing the computerized system documented and complete?

No - If they were, the system would have worked.

Yes - In the contract with attachments.

Don't know - The original bid by ECO and the District specifications in the RFP defined the system. This may have been ignored by both the District and ECO.

Yes - See board report when decision made and contract with ECO.

No - Neither short term nor long term.

QUESTION 3: Is there a clear description of data requirements necessary to operate the computerized student transportation system?

No - The district chose to alter the vendor's standard system drastically. Neither of the two principals involved realized the magnitude and complications related to the data requirements of the expanded system until each component was installed and activated. Activation required live data and live files to demonstrate the activity and interaction of each component. A pioneering effort such as this one always includes risk, mistakes and reworks.

Yes - There was in the beginning.

No - This project encompassed the design of a new computer routing and scheduling system using the Ecotran standard system as a base. Development of data requirements was a part of the system design.

QUESTION 4: Are required resources (hardware, software, personnel) necessary to operate a computerized system documented?

The documentation in a project such as the one described above, must of necessity, follow not precede its implementation. Much documentation, such as general and detailed specifications, have existed for over one year. Much related to personnel requirements on the part of the district still have not been addressed.

No - None have been delivered by ECO to the district that I am aware of.

We do have a manual but not sure if it is complete. Too complex - explains as if a programmer were to use system.

No - Partially, but to my knowledge documents are incomplete.

ECOSYSTEMS IMPLEMENTATION SURVEY

QUESTION 5: Was the responsibility of personnel engaged in various phases of Ecosystems' development and implementation defined in advance?

No - Not formally, officially or specifically. Project Team members were not relieved of other assigned responsibilities, given direction through establishment of goals and objectives nor provided administrative directions. Furthermore, project authority was not well explained to or accepted by district managers.

No - We had to constantly ask what our responsibilities would be.

No - There became too many users/decision makers and little coordination between them.

No - Did not seem to be clear understanding of who had specific responsibilities.

No - In some cases there was some discussion of responsibility, but to my knowledge, none of it was ever put on paper.

Yes - The original structure became fragmented as new problems emerged and band aid approches were used to solve them. The result - too many chiefs and lack of clear lines of authority andd responsibility.

No - still undefined.

QUESTION 6: Were individual responsibilities assigned to specific individuals in the conversion from the manual system to Ecosystems?

Yes - Specific members of the Project Team were assigned such responsibilities as redesign of the student data form, creation of a bus pass procedure, development/presentation of clerical inservice on pre-registration. These assignments and activities were identified, assigned, completed and evaluated only by the Project Team.

No - Not early enough and then on a crisis basis.

Yes - I assume they were.

QUESTION 6: (continued)

No - Not in sufficient manner or in a complete system.

Yes - Members of the task force were reorganized into subgroups with special areas of responsibilities, such as student data forms, bus pass procedures, clerical inservice, etc.

QUESTION 7: Was a plan developed for converting data files from the manual system to the new computerized system?

Yes - The "manual system" was not really a manual system in total. If it had been there would not be any data files. What data files did exist, primarily the bus stop master file, were converted to the new system in a planned and organized manner.

Yes - Pre-registration process.

Yes - All data files in transportation were converted to the new computerized system.

No - I'm not certain that there are any "files" in prior manual process. The input forms were not reviewed/revised to meet computer system needs.

QUESTION 8: Prior to Ecosystems implementation were data systems and transportation personnel given sufficient training to carry out their responsibilities in the use of the new system?

No - Transportation personnel needed hands on experience! September 1, 1985 inservice was spent waiting for the system to come up. Software - was being worked on. At no time was Transportation given any instruction concerning the answering of schools, parents or our own concerns.

QUESTION 8: (continued)

No - System was being developed by vendor and little training of a formal nature was done.

No - Late delivery of product. Poor inservice by knowledgeless personnel.

No - Absolutely not.

No - No, definitely not!!

No - Inservices were poor. We were told most revisions we needed were in "negotiation".

No - This was a real problem. Most training using the computer did not occur until late August. In some cases, inservice was done as little as 24 hours prior to the time the person was to assume the tasks.

No - Site personnel were given inservice. Transportation personnel received partial inservice.

No - Experience of last 3 months proves that training was inadequate.

No - No training was provided to me at all.

QUESTION 9: Is there a macro-level block diagram or flowchart of the student transportation processes to outline pictorially the sequence of the data processing steps?

No - If such exists, I have never had the opportunity to see it.

No - Flowchart exists in some parts of system, but not the total system.

No - Nor of manual steps.

Don't know - But I don't believe there was until late in the process.

QUESTION 10: Was the prior performance of the Ecosystem routing and scheduling system evaluated by transportation and data system personnel to determine if the system meets district needs?

Yes - Vendor's standard system was evaluated. District contracted for new system with significant new features.

Don't know - Operations people were led to believe last spring that system would meet specific needs.

Transportation personnel went to Cleveland 2 years ago and were discovering the same problems now that they pointed out then. Personally, I never saw an ECO route until less than 2 weeks prior to start of school.

Extensive evaluation with documentation, including assistance from an outside volunteer committee - the Advisory Committee on Data Systems for Pupil Transportation.

Site visits and discussion with other users preceded decision to use ECO.

Yes - But not in enough detail.

Yes - Whether the evaluation was thorough or appropriate, I don't know.

QUESTION 11: Has documentation been prepared explaining Ecosystems operating instructions and procedures necessary for the operation of the system?

85% completed and continuing - Documentation for the standard system, the TEF and MBS systems has been provided in a timely fashion. The district's requirements that revisions, additions and enhancements to those systems have not permitted parallel development of documentation. That is in progress at present but it's completion is being delayed by district priorities to further modify the systems.

QUESTION 11: (continued)

Yes - Transportation enrollment file; 1-18-85 manual. Various manuals have been sent out, but not complete with information relating to our needs.

Yes - A copy is on file at the Transportation Department and in the Ecosystems Project Office. Additional documentation is necessary to cover the customized portion of the system.

No - Some documentation exists, but it is not complete.

No - Neither for schools or for transportation operational personnel.

Yes - In a limited fashion.

QUESTION 12: Was an individual at an appropriate level given overall responsibility for the successful development and implementation of Ecosystems?

Don't know - There does not seem to be an individual available to alleviate the problems of ECO.

No - In a district like ours, and with a project the magnitude of this one the appropriate level of responsibility/authority should have been "Special Assistant to the Superintendent," with authority exceeding that of an Assistant Superintendent.

Don't know - it is hard to determine who was originally given responsibility overall.

No - Level of individual was too low.

The original structure became fragmented as new problems emerged and band aid approaches were used to solve them. The result - too many chiefs and lack of clear lines of authority and responsibility.

No - Should have probably been director level or higher.

QUESTION 13: Was there an implementation plan developed for Ecosystems?

September 9, 1985, no options - ECO would run for school start-up.

Yes - Regardless of obvious problems.

Yes - The contract contains a timeline which references specific activities. It is comprehensive in its content, if not its attention to realistic time requirements.

Yes - But obviously it was not adequate.

Don't know - For 1985-86? Use it no matter what, I guess.

No - There was a lot of talking - nothing on paper except a preliminary plan done in January - February, 1985 by Task Force.

Yes - An extensive listing of timelines and deliverables tied to the payment schedule was included in the contract. The interface of the computer routing and scheduling system among the divisions of the district was to be completed by the project task team. A rather comprehensive plan was developed during the summer of 1985 by this team.

Yes - But plan did not anticipate all of the problems and how to deal with them.

No - We had some partial ones.

QUESTION 14: Was there a management system developed for Ecosystems?

Yes - Spectrum.

Yes - Task Force for Ecosystems.

Yes - Spectrum was partially implemented by our staff.

QUESTION 15: Were cost projections established and monitored for the Ecosystems routing and scheduling system?

Yes - Contract timeline included milestones tied to payments. Payments were monitored conscientiously.

Yes - Schedule 6 of the board report awarding the contract to Ecotran included an estimated projection of costs for the development and implementation of the system. Contract documentation includes timelines and deliverables tied to payments under the contract.

Yes and no - Cost projections were established and monitored until severe problems emerged in August. Goal has been to fix what isn't working and cost has been a secondary concern.

Yes - But contingencies weren't provided for.

QUESTION 16: (a) Was a formal reporting mechanism created to provide district management with status reports on Ecosystems development progress?

(b If yes, did the reporting structure include sufficient levels of district management to ensure that necessary corrective actions were taken?

(a) Yes - (b) No - Periodic reports to Cabinet, Board.

All early reports stated system was working on time, no problems, etc., etc. Not until late August did truth surface.

No - I believe that additional communication should have occurred about uniqueness of Special Education program needs.

No - Some members of the Task Force began last January to voice serious concerns regarding the ability to have a smoothly - operating system. There was no known chain of command operating. Information did not flow up or down. Consequently, even known problems were not addressed until late August.

QUESTION 16: (continued)

(a) Yes - (b) No - Mechanism was created and interdivisional representation was a part of it, but decisions on unresolved issues were not clear when made and sometimes apparently were not made at all.

(a) Yes - (b) Yes - Personal involvement in receiving reports. Reports were at sufficient levels but did not focus on the primary issues.

(a) Yes - (b) Yes - ECO project team levels of management were high enough, but not much done on time.

QUESTION 17: Does documentation exist in the following areas:

(a) Flowcharts showing the sequence of data processing steps.
(b) Flow of transactions through the system.
(c) Files maintained by the system.
(d) Programs used to maintain the files.

(a) No - Except for a preliminary flow chart for pre-registration done by the Task Force. (b,c,d) - Don't know.

(a,b,c,d) - Yes - Partially, but it is not all available in one place, systematically cross referenced and it isn't sufficient.

QUESTION 18: Can Ecosystem accommodate the necessary changes to operate the computerized scheduling and routing system by March 1 to meet the needs of the 1986-87 school year?

Don't know - Has not run efficiently yet.

No - Not for Special Education.

QUESTION 18: (continued)

No - If the system remains unchanged - no.

No - I base this decision on discussions with key Data Systems Personnel members of the Data Task Force.

Don't know - So far, it has not been shown to me that it can meet our needs.

Don't know - I don't think that ECO will ever be able to solve its problems. The Batch Match system lacks the individual attention needed for Special Education Students.

Changes necessary are not defined yet.

No - In my opinion there is not enough time for 1986-87. We should start now for 1987-88.

QUESTION 19: Has an Ecosystems' cost/benefited analysis been developed that will measure the guarantees in the contractual agreement with the district?

Don't know - An analysis is in progress but I don't know exactly what it will measure.

Yes - This needs to be included in the contract and updated for the current application.

Don't know - I thought so, but now I am unsure.

Don't know - Review of costs is underway.

Don't know - If not, should be.

QUESTION 20: Were the Ecosystems users (in Transportation and Data Systems) involved adequately in Ecosystem's development?

Yes - From the standpoint of management, most definitely. Where transportation was concerned, I don't know whether staff had input to the RFP. I suspect staff input to general and detailed design specification was extremely limited. Data Systems supervisory staff did provide input to software development and installation process to a substantial degree the past 8-10 months.

We were involved to a small degree, however much of what we said and did was ignored.

No - Even after two years work prior to implementation, only briefly were the users involved with its planning.

No - Very few in Transportation - Data System people were ignored.

No - Especially Transportation.

Yes - Not sure there is ever enough involvement.

QUESTION 21: Have Data Systems personnel shown commitment to Ecosystems?

For the first 20 months of the project, definitely not, with one exception. As the summer progressed this year, I saw varied degrees of commitment develop on the part of operations, technical support and student records. In the last month, I've seen some commitment emerge on the part of management.

Yes - Without the key Data Systems Personnel assigned to the Project Team and the dedication of others demonstrated by working overtime to get things out, Ecosystems would have bombed even more than it did!

Yes - Support is currently shown within the staff.

No - My "no" should be qualified to make clear that some have supported, but it has been uneven support.

Yes and no - Not at first (for sometime) - now very helpful.

ECOSYSTEMS IMPLEMENTATION SURVEY

QUESTION 22: Have Transportation personnel shown commitment to Ecosystems?

Yes - We have been on mandatory 10 hour days and 7 day work weeks trying to clean up the mess since August 17, 1985.

Yes - No choice.

In the beginning, definitely not. Technical staff was apprehensive, assuming they would be replaced by a computer. Supervisory staff was not integrally involved in design of the system and are always so harried and overworked have no time to independently solicit information. Inservice training was frustrating without live data files and software problems immediately following file updates delayed final inservicing.

Yes - Everyone here has worked until they have become sick (ill). We are a good team, who want the students to get to school.

Yes - Super cooperation and dedication to the children.

Yes - 7 days a week, over 10 hours a day.

No - Not below the top management level.

We've shown a commitment in that we've been working 10 hours a day, 7 days a week to try to correct the problems. We're getting tired though. Usually by now things are starting to slow down for us. In Special Education it has slowed down, but remember there are about four times as many people working in this section now than there were last year at this time. It is because of the large number of staff working, and also the large number of ECO routes that went back to manual routes that we have things fairly well under control. During the past year or so not only has ECO been implemented but also the process was implemented whereby the Planning Department moves routes from driver to driver on a weekly basis to "maximize efficiency". If this process continues, and we stay with Ecosystems, the district must make a commitment to permanently increase the size of the Transportation staff.

Yes - Transportation Operations Staff and Planning Personnel have done an outstanding job to keep this system going with its restrictions put on us.

QUESTION 22: (continued)

Support is currently shown within the staff. Staff have indicated that the system shows promise with correction of software problems.

No - It has yet to prove itself. It takes too many steps to add a student or change him as compared to manually doing it.

ADDITIONAL COMMENTS ADDED BY RESPONDENTS

I would suggest that Special Ed students be manually routed for the 1986-87 school year.

Due to the frequent changes in location for Special Education student, the present system does not appear to be effective.

Intention of original contract was for "Turnkey" system activity. Vendor was to develop map file, computerize district ridership policies, develop custom software, change ECHO software to meet district specifications, install all software, test software, train district staff, etc. First year was not implemented since software promised district was not ready and in some cases was not even programmed. In year 2, a project team with expanded powers was proposed and implemented. Team did not work for many reasons. Project status reporting was unrealistic and only what people wanted to hear. Vendor became unwilling to commit resources necessary to do project and project leader took on many tasks as district tasks that vendor should have done. Contract calls for software development to be done according to in-house standards. Communication was impossible and in many cases non-existant. Vendor became non-responsive, district position was implemented at all costs. Project team became non-functioning body with project leader making all decisions without necessarily knowing effect that decisions would have. In effect it was terrible.

ADDITIONAL COMMENTS ADDED BY RESPONDENTS (continued)

I feel that the basic premise of Ecosystems or rather computerized routing and scheduling is a viable program. It will take a lot of work, however, to get our present system in shape to do the job adequately. There are serious software problems, serious organizational problems in transportation, procedural problems in special education. In addition, the timeline is short: We really need all problems resolved by January 1st if we are to have an efficiently working process in place for articulation for 1985-86.

The contract is another major concern. It was poorly written. I'm concerned that not enough care and attention are being given to any new amendments or "enhancements".

Top management was not sufficiently aware of the assumptions upon which Ecosystems was to be initiated. Had we been so informed, we would have been able to evaluate whether or not these were acceptable.

My own assessment is that the project leadership should have been assigned to someone at the assistant superintendent level and that attention needed to be given to bridging (integrating) the technical and educational dimensions.

APPENDIX C

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

FLOWCHARTS ON KEY ECO SYSTEMS IMPLEMENTATION PROCESSES

JANUARY 7, 1986

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

FLOWCHARTS ON KEY ECO SYSTEMS IMPLEMENTATION PROCESSES

Three flowcharts illustrate the paper work and processes necessary for a student to receive transportation services in the VEEP, Magnet and Special Education Programs (Magnet Chart I, VEEP Chart II, and Special Education Chart III). It should be noted that the flowcharts describe the paper work and process steps involved in a student obtaining transportation. The charts do not go into detail on the technical activities that are particular to Data Systems.

A program enrollment form must be prepared to initiate VEEP or Magnet transportation. The school reviews the completed form and sends a copy to Data Systems. Data Systems ensures that pertinent data on the enrollment form and student data form are in agreement. Prior to ECO implementation the school sent the enrollment form directly to Transportation. Currently the form is sent directly to Data Systems. The form is then sent to the program office where it is reviewed and approved. The program office sends it back to Data Systems to be picked up by Transportation. When the form is received at Transportation, the student is scheduled on a route through a series of steps illustrated on the VEEP and Magnet flowcharts.

A F-10 form must be prepared to initiate Special Education transportation. The Special Education placement office completes the form and sends it to their Management Information System (MIS) office. This office ensures that the data on the form and MIS data file are in agreement. The MIS office sends a copy to Data Systems so that they can ensure that the F-10 form and student data base agree. The MIS office also sends a copy of the form to the Transportation department where the student is scheduled for transportation on a route through a series of steps as illustrated on the Special Education transportation flowchart.

SCHOOL SITE

DATA SYSTEMS

PROGRAM OFFICE

INTEGRATION SCHEDULERS

PLANNING

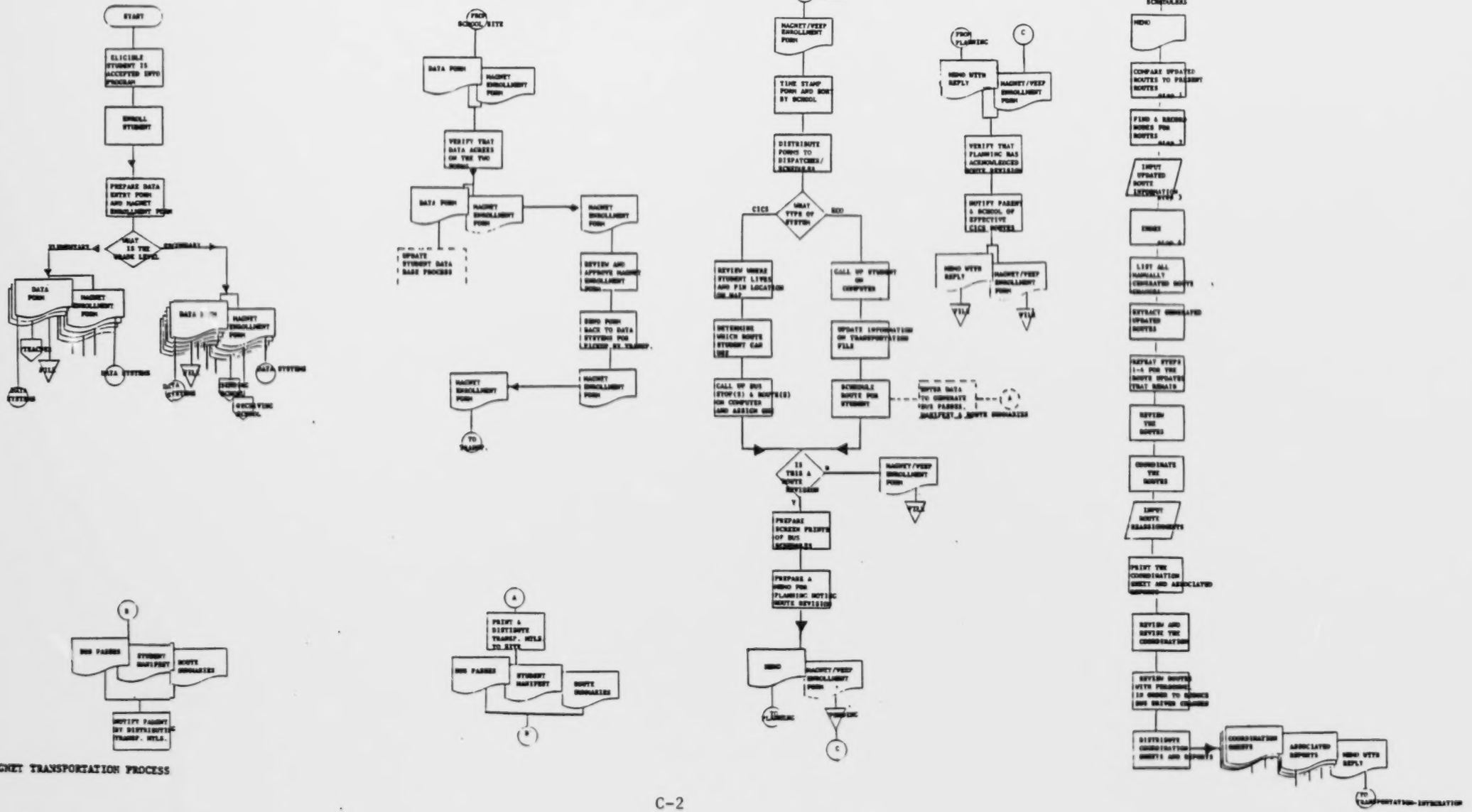
START
ELIGIBLE STUDENT IS ACCEPTED INTO PROGRAM
ENROLL STUDENT
PREPARE DATA ENTRY FORM AND MAGNET ENROLLMENT FORM
WHAT IS THE GRADE LEVEL
ELEMENTARY
SECONDARY
DATA FORM
MAGNET ENROLLMENT FORM
TEACHER FILE
DATA SYSTEMS
FROM SCHOOL SITE
DATA FORM
MAGNET ENROLLMENT FORM
VERIFY THAT DATA AGREES ON THE TWO FORMS
UPDATE STUDENT DATA BASE PROCESS
REVIEW AND APPROVE MAGNET ENROLLMENT
SEND FORM BACK TO DATA SYSTEMS FOR KEYING BY VENDOR
TO PLANNING
FROM DATA SYSTEMS
MAGNET/VEEP ENROLLMENT FORM
TIME STAMP FORM AND SORT BY SCHOOL
DISTRIBUTE FORMS TO DISPATCHER/SCHEDULER
WHAT TYPE OF SYSTEM
CICS
BUS
REVIEW WHERE STUDENT LIVES AND PIN LOCATION ON MAP
DETERMINE WHICH ROUTE STUDENT CAN USE
CALL UP BUS STOP(S) & ROUTE(S) NOW COMPUTED AND ASSIGN ONE
CALL UP STUDENT ON COMPUTER
UPDATE INFORMATION ON TRANSPORTATION FILE
SCHEDULE ROUTE FOR STUDENT
ENTER DATA TO GENERATE BUS PASSES, MANIFEST & ROUTE SUMMARIES
IS THIS A ROUTE REVISION
MAGNET/VEEP ENROLLMENT FORM
FILE
PREPARE SCREEN PRINTS OF BUS SCHEDULES
PREPARE A MEMO FOR PLANNING NOTING ROUTE REVISION
MEMO
MAGNET/VEEP ENROLLMENT FORM
PLANNING
TYPING
FROM PLANNING
MEMO WITH REPLY
MAGNET/VEEP ENROLLMENT FORM
VERIFY THAT PLANNING HAS ACKNOWLEDGED ROUTE REVISION
NOTIFY PARENT & SCHOOL OF EFFECTIVE CICS ROUTES
MEMO WITH REPLY
MAGNET/VEEP ENROLLMENT FORM
FILE
FROM SCHEDULERS
MEMO
COMPARE UPDATED ROUTES TO PRESENT ROUTES
FIND & RECORD NODES FOR ROUTES
INPUT UPDATED ROUTE INFORMATION
INDEX
LIST ALL MANUALLY GENERATED ROUTES
EXTRACT GENERATED UPDATED ROUTES
REPEAT STEPS 1-4 FOR THE ROUTE UPDATES THAT REMAIN
REVIEW THE ROUTES
COORDINATE THE ROUTES
INPUT ROUTE REASSIGNMENTS
PRINT THE COORDINATION SHEET AND ASSOCIATED REPORTS
REVIEW AND REVISE THE COORDINATION
REVISE ROUTES WITH PROBLEMS; IF SENT TO SCHOOL BUS DRIVER CHANGES
DISTRIBUTE COORDINATION SHEETS AND REPORTS
COORDINATION SHEETS
ASSOCIATED REPORTS
MEMO WITH REPLY
TO TRANSPORTATION-INTEGRATION
BUS PASSES
STUDENT MANIFEST
ROUTE SUMMARIES
NOTIFY PARENT BY DISTRIBUTING TRANSP. NOTE.
PRINT & DISTRIBUTE TRANSP. NOTE TO SITE
BUS PASSES
STUDENT MANIFEST
ROUTE SUMMARIES

CHART I- MAGNET TRANSPORTATION PROCESS

SCHOOL SITE

DATA SYSTEMS

PROGRAM OFFICE

TRANSPORTATION DEPARTMENT

INTEGRATION SCHEDULERS

PLANNING

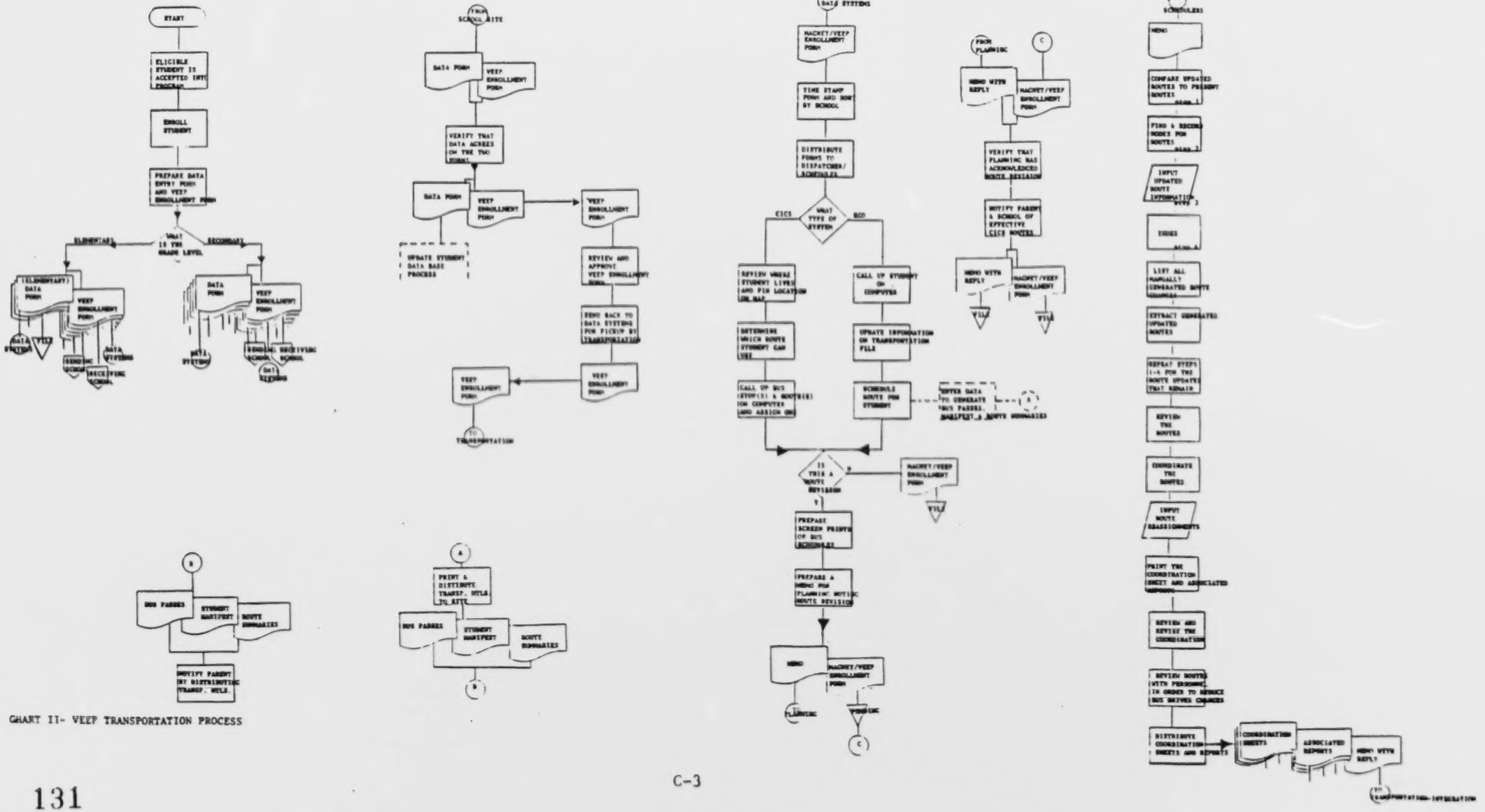

CHART II- VEEP TRANSPORTATION PROCESS

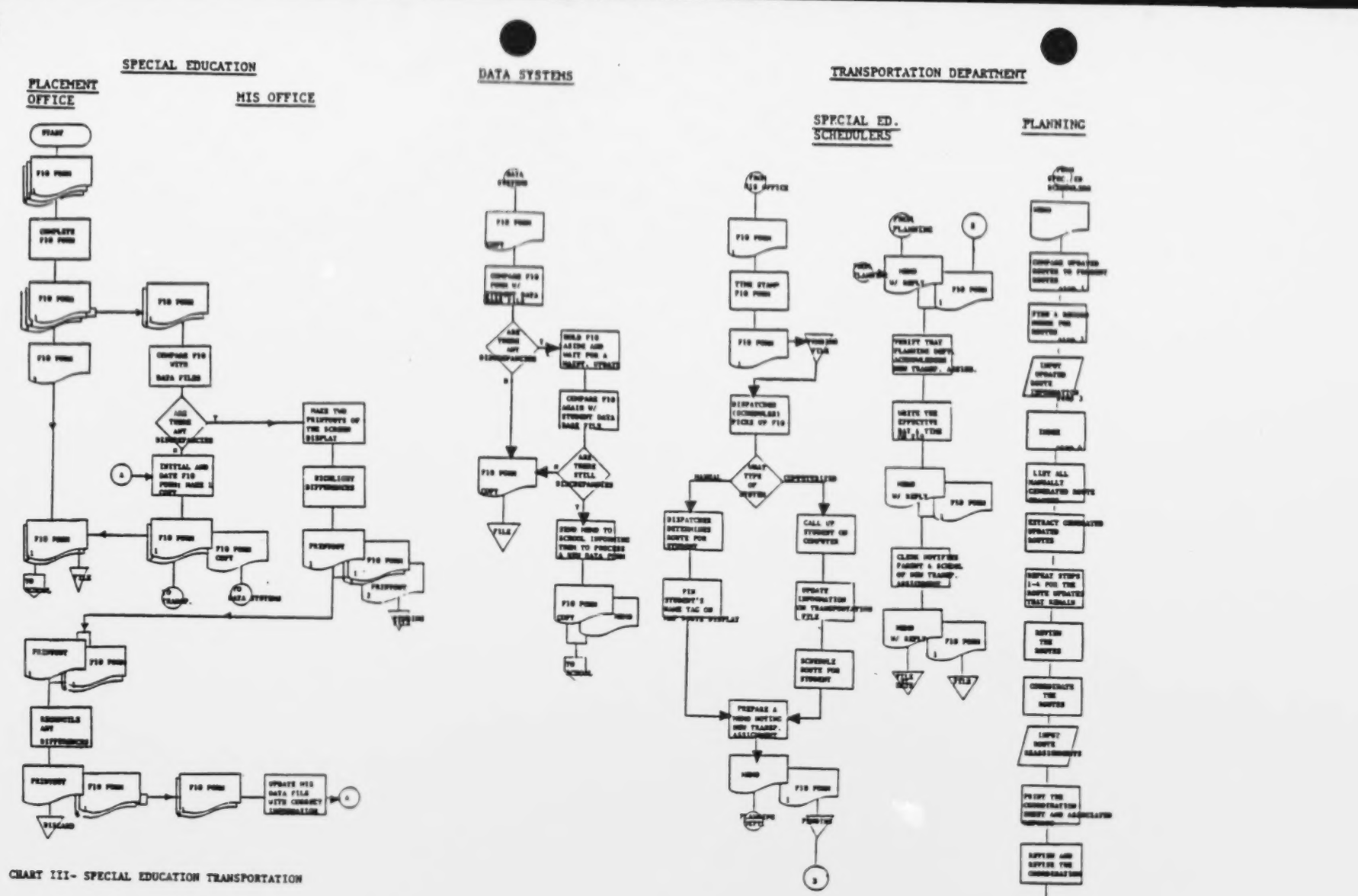

CHART III- SPECIAL EDUCATION TRANSPORTATION

APPENDIX D

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

ECOTRAN SYSTEMS, INC.

COST OF IMPLEMENTING THE

ECOSYSTEM COMPUTERIZED ROUTING AND SCHEDULING SYSTEM

JANUARY 7, 1986

ECOTRAN SYSTEMS, INC.

COST OF IMPLEMENTING THE ECOSYSTEM
COMPUTERIZED ROUTING AND SCHEDULING PUPIL TRANSPORTATION SYSTEM

The superintendent directed that a report be developed showing the additional cost of implementing the Ecosystems computerized routing and scheduling system. The report is intended to show the additional cost of implementing the automated cost over the cost associated with the previous manual system.

This report shows the actual expenditures for the fiscal years 1983-84 and 1984-85 and the actual expenditures for 1985-86 through November 15, 1985 and the fiscal year projected cost for approved contracts and personnel salaries and benefits. As additional expenditures are processed, the report will be updated.

Included in the process for developing the report, the Assistant Superintendent for Business Services, key management staff in the Data Systems Department, and the Transportation Department were consulted to assist in identifying the additional cost of implementing the automated system.

SAN DIEGO UNIFIED SCHOOL DISTRICT
BUDGET & COST CONTROLS DEPARTMENT
ECOTRAN SYSTEMS INC.,
COMPUTERIZED ROUTING AND SCHEDULING SYSTEM

1983-84, 1984-85, 1985-86 CONTRACT & DISTRICT SUPPORT EXPENDITURES
THROUGH NOVEMBER 15, 1985 & PROJECTED COST FOR KNOWN ITEMS

DEPARTMENT EXPENDITURES	1983-84 EXPENDITURES				1984-85 EXPENDITURES				1985-86 EXPENDS THRU 11/15 & PROJ				TOTAL EXPENDITURES			
	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL
ECOTRAN CONTRACT	7,464	139,970	123,606	271,040	21,808	50,412	223,340	295,560	842	55,581	83,194	139,617 *	30,114	245,963	430,140	706,217
DISTRICT SUPPORT																
DATA SYSTEMS DEPT.																
SALARIES/POSITIONS	0	0	0	0	0	13,498	13,800	27,298	0	16,133	17,563	33,696 **	0	29,631	31,363	60,994
BENEFITS	0	0	0	0	0	3,704	3,917	7,621	0	4,152	4,219	8,371 **	0	7,856	8,136	15,992
CONSULTANTS	0	0	0	0	0	21,244	31,867	53,111	0	36,604	54,907	91,511	0	57,848	86,774	144,622
TOTAL	0	0	0	0	0	38,446	49,584	88,030	0	56,889	76,689	133,578	0	95,335	126,273	221,608
SCHOOL OPERATIONS																
SALARIES/HRLY	0	0	0	0	0	0	2,818	2,818	0	2,757	17,725	20,482	0	2,757	20,543	23,300
BENEFITS	0	0	0	0	0	0	190	190	0	184	1,069	1,253	0	184	1,259	1,443
TOTAL	0	0	0	0	0	0	3,008	3,008	0	2,941	18,794	21,735	0	2,941	21,802	24,743
COMMUNITY REL. & INTEGR.																
SALARIES/HRLY	0	0	0	0	0	0	0	0	0		2,831	2,831	0	0	2,831	2,831
BENEFITS	0	0	0	0	0	0	0	0	0		143	143	0	0	143	143
TOTAL	0	0	0	0	0	0	0	0	0	0	2,974	2,974	0	0	2,974	2,974

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SAN DIEGO UNIFIED SCHOOL DISTRICT
BUDGET & COST CONTROLS DEPARTMENT
ECOTRAN SYSTEMS INC.
COMPUTERIZED ROUTING AND SCHEDULING SYSTEM

1983-84, 1984-85, 1985-86 CONTRACT & DISTRICT SUPPORT EXPENDITURES
THROUGH NOVEMBER 15, 1985 & PROJECTED COST FOR KNOWN ITEMS

DEPARTMENT EXPENDITURES	1983-84 EXPENDITURES				1984-85 EXPENDITURES				1985-86 EXPENDS THRU 11/15 & PROJ				TOTAL EXPENDITURES			
	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL
TRANSPORTATION DEPT.																
SALARIES/HRLY	0	0	0	0	0	1,009	1,241	2,250	0	899	5,698	6,597	0	1,908	6,939	8,847
BENEFITS	0	0	0	0	0	38	84	122	0	40	513	553	0	78	597	675
SUPPLIES	0	0	0	0	0	0	0	0	0	2,304	4,608	6,912	0	2,304	4,608	6,912
TRAVEL	0	0	0	0	0	2,448	4,011	6,459	0	2,405	2,537	4,942	0	4,853	6,548	11,401
TELEPHONE	0	0	0	0	0	390	585	975	0	0	0	0	0	390	585	975
EXPRESS DELIVERY	63	117	71	251	81	387	423	891	143	313	606	1,062	287	817	1,100	2,204
FACILITIES RENTAL	0	0	0	0	0	52	86	138	0	313	468	781	0	365	554	919
BUILDING IMPROVEMENT	0	0	0	0	0	113	226	339	0	863	1,754	2,617	0	976	1,980	2,956
CONTR/DATA ENTRY	0	0	0	0	0	4,069	5,651	9,720	0	1,746	3,998	5,744	0	5,815	9,649	15,464
TOTAL	63	117	71	251	81	8,506	12,307	20,894	143	8,883	20,182	29,208	287	17,506	32,560	50,353
TELEPHONE HOTLINE																
SUPERVISORY SALARIES	0	0	0	0	0	0	0	0	0	3,586	5,601	9,187	0	3,586	5,601	9,187
CLERICAL SALARIES	0	0	0	0	0	0	0	0	0	1,321	2,643	3,964	0	1,321	2,643	3,964
BENEFITS	0	0	0	0	0	0	0	0	0	110	221	331	0	110	221	331
CONTR/TELEPHONE OPER.	0	0	0	0	0	0	0	0	0	24,027	36,041	60,068	0	24,027	36,041	60,068
TELEPHONE EXPENSE	0	0	0	0	0	0	0	0	0	1,842	3,686	5,528	0	1,842	3,686	5,528
TOTAL	0	0	0	0	0	0	0	0	0	30,886	48,192	79,078	0	30,886	48,192	79,078
ADMINISTRATIVE OFFICES																
SALARIES	0	0	0	0	0	0	0	0	0	2,382	4,696	7,078	0	2,382	4,696	7,078
BENEFITS	0	0	0	0	0	0	0	0	0	160	413	573	0	160	413	573
TOTAL	0	0	0	0	0	0	0	0	0	2,542	5,109	7,651	0	2,542	5,109	7,651

SAN DIEGO UNIFIED SCHOOL DISTRICT
BUDGET & COST CONTROLS DEPARTMENT
ECOTRAN SYSTEMS INC.,
COMPUTERIZED ROUTING AND SCHEDULING SYSTEM

1983-84, 1984-85, 1985-86 CONTRACT & DISTRICT SUPPORT EXPENDITURES
THROUGH NOVEMBER 15, 1985 & PROJECTED COST FOR KNOWN ITEMS

DEPARTMENT EXPENDITURES	1983-84 EXPENDITURES				1984-85 EXPENDITURES				1985-86 EXPENDS THRU 11/15 & PROJ				TOTAL EXPENDITURES			
	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL	REG PGMS	SPEC ED	INTEGR PLAN	TOTAL
SPECIAL ED DEPTS.																
SALARIES	0	0	0	0	0	394	0	394	0	2,703	0	2,703	0	3,097	0	3,097
BENEFITS	0	0	0	0	0	26	0	26	0	214	0	214	0	240	0	240
TOTAL	0	0	0	0	0	420	0	420	0	2,917	0	2,917	0	3,337	0	3,337
OTHER DEPARTMENTS																
SALARIES	0	0	0	0	0	0	296	296	0	265	732	997	0	265	1,028	1,293
BENEFITS	0	0	0	0	0	0	20	20	0	17	64	81	0	17	84	101
TOTAL	0	0	0	0	0	0	316	316	0	282	796	1,078	0	282	1,112	1,394
TOTAL EXPENDITURES	7,527	140,087	123,677	271,291	21,889	97,784	288,555	408,228	985	160,921	255,930	417,836	30,401	398,792	668,162	1,097,355

*1985-86 PROJECTED EXPENDITURES FOR THE ECOTRAN CONTRACT
**SALARY AND EMPLOYEE BENEFIT PROJECTED EXPENDITURES FOR 1.00 TECHNICAL PERSONNEL POSITION IN DATA SYSTEMS DEPT.

APPENDIX E

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

BUS ROUTE AND RIDERSHIP AUDIT

JANUARY 7, 1986

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

TRANSPORTATION BUS AUDIT

SUMMARY

A transportation bus audit was performed by college students under the direction of the district Internal Auditor to determine the following:

1. If the buses are arriving at the school site on time.

2. If the number of students indicated on the transportation Master Schedule are approximately equal to the actual number of students transported.

3. The common transportation problems existing among the schools audited.

Twenty-five schools were randomly selected which included VEEP, Magnet, and Special Education transportation. A total of 213 buses were audited.

Explanation of findings:

A. Out of 213 buses audited for promptness, 74 were early and 118 were late. Listed below is a breakdown by minutes of the number of late and early buses.

	1-5 min.	6-10 min.	11-20 min.	21-45 min.
Late	56	29	25	8
Early	46	[illegible]	12	0

TRANSPORTATION BUS AUDIT
SUMMARY

The table below illustrates a comparison between the passenger count listed on the Master Schedule for transportation (Column D of the bus audit) and the actual number of students transported per the school records (Column C of bus audit). Sixty-one buses showed a difference in count as illustrated on the table.

Master Schedule for Transportation Vs. Actual Count Per School Records

Range:	5-9 passengers	10-19 passengers	20 and over passengers
Number of buses with differences	29	22	10

C. Audited school sites identified the following transportation problems existing as of November 26, 1985:

1. Late buses created a problem for students receiving the free breakfast program.

2. Schools are not informed when a bus breaks down.

3. Routes change too often.

4. Routes exceed the one hour limit.

5. Bus drivers are changed too often. This creates a hardship on special education students who require a continuity and consistency in their environment.

6. The student manifests contain erroneous data.

7. The communication between the Transportation Department and the school site is too impersonal.

8. Transportation materials distributed to sites do not include instructions in regard to what the materials are and how they are to be distributed to the parents and students.

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team

TRANSPORTATION BUS AUDIT

The following seven pages represent the data collected on the Transportation Bus Audit. The descriptions of each column are as follows:

Column

A Represents the legal bus size.

B Represents a bus size conversion to accommodate older students.

C The number of students the school expects on each bus--takes into consideration absent students.

D The passenger count per the transportation Master Schedule (spreadsheet).

E The time in minutes the bus arrived late.

F The time in minutes the bus arrived early.

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team
Transportation Bus Audit

SCHOOL	DATE OF AUDIT	CARRIER	A BUS SIZE	B SDUSD CONV.	C NO. STDNTS EXPECTED PER SCHOOL	D-C DIF	D MASTER SCHED FOR TRANSP.	E TIME LATE	F TIME EARLY
GRANT ELEMENTARY	11/15	SAN DIEGO UNIFIED	41	35	22	3	25		
GRANT ELEMENTARY	11/15	LAIDLAW	91	79	15	1	16	0:08	
GRANT ELEMENTARY	11/15	LAIDLAW	41	35	32	2	34		0:05
GRANT ELEMENTARY	11/15	LAIDLAW	91	79	23	(1)	22	0:10	
GRANT ELEMENTARY	11/15	PAULS	70	62	39	4	43		0:02
GRANT ELEMENTARY	11/15	PAULS	70	62	24	0	24		0:10
GRANT ELEMENTARY	11/15	LAIDLAW	78	67	14	3	17	0:05	
GRANT ELEMENTARY	11/15	SAN DIEGO UNIFIED	65	56	17	0	17	0:05	
GRANT ELEMENTARY	11/15	MARK IV	23	20	23	(2)	21	0:21	
VALENCIA PARK	11/18	LAIDLAW	78	67	4	2	6		0:12
VALENCIA PARK	11/18	MARK IV	91	79	22	(1)	21	0:01	
VALENCIA PARK	11/18	LAIDLAW	65	56	16	(2)	14		0:06
VALENCIA PARK	11/18	SAN DIEGO UNIFIED	23	20	10	12	22		0:00
VALENCIA PARK	11/18	SAN DIEGO UNIFIED	29	25	9	2	11	0:08	
KNOX ELEMENTARY	11/19	MARK IV	16	14	5	1	6		0:07
KNOX ELEMENTARY	11/19	TAYLOR	48	41	7	0	7		0:02
KNOX ELEMENTARY	11/19	TAYLOR	65	56	6	0	6	0:12	
KNOX ELEMENTARY	11/19	SAN DIEGO UNIFIED	29	25	24	0	24	0:05	
KNOX ELEMENTARY	11/19	SAN DIEGO UNIFIED	48	41	16	1	17		
KNOX ELEMENTARY	11/19	TAYLOR	48	41	15	9	24		0:04
KNOX ELEMENTARY	11/19	LAIDLAW	91	79	1	5	6	0:10	
KNOX ELEMENTARY	11/19	SAN DIEGO UNIFIED	48	41	12	26	38		0:07
KNOX ELEMENTARY	11/19	TAYLOR	65	56	26	2	28		
ENCANTO ELEM	11/20	TAYLOR	48	41	16	1	17		0:05
ENCANTO ELEM	11/20	LAIDLAW	48	41	11	5	16	0:45	
ENCANTO ELEM	11/20	LAIDLAW	65	56	21	6	27	0:01	
ENCANTO ELEM	11/20	LAIDLAW	91	79	15	(1)	14		0:09
ENCANTO ELEM	11/20	TAYLOR	65	56	20	2	22		0:03
ENCANTO ELEM	11/20	LAIDLAW	78	67	17	(3)	14	0:01	
ENCANTO ELEM	11/20	TAYLOR	65	56	20	1	21	0:15	
ENCANTO ELEM	11/20	TAYLOR	65	56	17	2	19	0:05	

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team
Transportation Bus Audit

SCHOOL	DATE OF AUDIT	CARRIER	A BUS SIZE	B SDUSD CONV.	C NO. STDNTS EXPECTED PER SCHOOL	D-C DIF	D MASTER SCHED FOR TRANSP.	E TIME LATE	F TIME EARLY
ENCANTO ELEM	11/20	LAIDLAW	48	41	12	3	15		0:02
ENCANTO ELEM	11/20	LAIDLAW	91	79	34	(3)	31	0:07	
ENCANTO ELEM	11/20	PAULS	65	56	14	3	17	0:05	
ENCANTO ELEM	11/20	LAIDLAW	65	56	22	(10)	12	0:10	
ENCANTO ELEM	11/20	LAIDLAW	78	67	17	0	17	0:01	
OAK PARK ELEM	11/25	PAULS	91	79	52	4	56		0:04
OAK PARK ELEM	11/25	SAN DIEGO UNIFIED	65	56	50	(3)	47	0:01	
OAK PARK ELEM	11/25	LAIDLAW	78	67	32	1	33		0:03
OAK PARK ELEM	11/25	TAYLOR	41	35	9	3	12	0:05	
OAK PARK ELEM	11/25	TAYLOR	65	56	16	0	16		0:04
OAK PARK ELEM	11/25	PAULS	72	62	20	(1)	19	0:17	
OAK PARK ELEM	11/25	PAULS	65	56	27	0	27	0:04	
OAK PARK ELEM	11/25	LAIDLAW	65	56	17	1	18	0:05	
OAK PARK ELEM	11/25	LAIDLAW	78	67	61	2	63	0:25	
OAK PARK ELEM	11/25	MARK IV	91	79	36	0	36	0:20	
OAK PARK ELEM	11/25	SAN DIEGO UNIFIED	65	56	17	0	17		0:06
BAKER ELEMENTARY	11/19	LAIDLAW	34	73	73	2	75		0:10
BAKER ELEMENTARY	11/19	MARK IV	91	79	13	4	17		0:05
BAKER ELEMENTARY	11/19	PAULS	76	66	13	6	19	0:06	
BAKER ELEMENTARY	11/19	LAIDLAW	78	67	30	0	30	0:07	
BAKER ELEMENTARY	11/19	LAIDLAW	78	67	14	6	20		0:14
BAKER ELEMENTARY	11/19	SAN DIEGO UNIFIED	29	25	19	(6)	13		0:00
BAKER ELEMENTARY	11/19	TAYLOR	48	41	27	5	32		0:10
GOMPERS	11/21	PAULS	70	54	36	(1)	35		0:02
GOMPERS	11/21	SAN DIEGO UNIFIED	72	55	52	(2)	50	0:05	
GOMPERS	11/21	PAULS	70	54	13	5	18		0:02
GOMPERS	11/21	SAN DIEGO UNIFIED	65	49	51	4	55	0:11	
GOMPERS	11/21	LAIDLAW	65	49	40	21	61	0:00	
GOMPERS	11/21	PAULS	72	55	46	11	57		0:07
GOMPERS	11/21	PAULS	65	49	43	(1)	42		0:02
GOMPERS	11/21	TAYLOR	65	49	49	11	60	0:06	

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team
Transportation Bus Audit

SCHOOL	DATE OF AUDIT	CARRIER	A BUS SIZE	B SDUSD CONV.	C NO. STDNTS EXPECTED PER SCHOOL	D-C DIF	D MASTER SCHED FOR TRANSP.	E TIME LATE	F TIME EARLY
GOMPERS	11/21	PAULS	76	58	41	13	54	0:08	
GOMPERS	11/21	SAN DIEGO UNIFIED	76	58	66	(7)	59		0:02
GOMPERS	11/21	TAYLOR	65	49	35	4	39	0:05	
GOMPERS	11/21	PAULS	65	49	47	5	52		0:01
GOMPERS	11/21	PAULS	70	54	48	12	60	0:02	
MEMORIAL JR HIGH	11/26	SAN DIEGO UNIFIED	32	25	11	2	13	0:02	
MEMORIAL JR HIGH	11/26	TAYLOR	41	31	13	4	17	0:07	
MEMORIAL JR HIGH	11/26	TAYLOR	65	49	18	3	21	0:06	
MEMORIAL JR HIGH	11/26	TAYLOR	41	31	22	6	28	0:00	
MEMORIAL JR HIGH	11/26	LAIDLAW	65	49	23	20	43		0:01
MEMORIAL JR HIGH	11/26	TAYLOR	48	36	22	14	36	0:00	
MEMORIAL JR HIGH	11/26	SAN DIEGO UNIFIED	48	36	16	9	25		0:06
MEMORIAL JR HIGH	11/26	SAN DIEGO UNIFIED	65	49	24	5	29	0:05	
MEMORIAL JR HIGH	11/26	SAN DIEGO UNIFIED	27	20	14	2	16		0:02
MEMORIAL JR HIGH	11/26	TAYLOR	16	12	7	1	8	0:02	
O'FARRELL SCPA	11/21	SAN DIEGO UNIFIED	65	49	40	(1)	39	0:14	
O'FARRELL SCPA	11/21	TAYLOR	48	36	23	2	25		0:05
O'FARRELL SCPA	11/21	PAULS	65	49	57	(4)	53	0:04	
O'FARRELL SCPA	11/21	SAN DIEGO UNIFIED	65	49	41	0	41	0:10	
O'FARRELL SCPA	11/21	SAN DIEGO UNIFIED	29	22	22	(1)	21	0:01	
O'FARRELL SCPA	11/21	LAIDLAW	41	31	24	(2)	22		
O'FARRELL SCPA	11/21	SAN DIEGO UNIFIED	65	49	44	2	46	0:08	
O'FARRELL SCPA	11/21	LAIDLAW	78	59	54	(1)	53		
O'FARRELL SCPA	11/21	SAN DIEGO UNIFIED	23	17	13	0	13		0:04
O'FARRELL SCPA	11/21	LAIDLAW	91	69	73	(2)	71	0:12	
O'FARRELL SCPA	11/21	SAN DIEGO UNIFIED	48	36	29	0	29		0:02
O'FARRELL SCPA	11/21	TAYLOR	48	36	27	0	27		0:05
O'FARRELL SCPA	11/21	PAULS	65	49	57	0	57	0:07	
O'FARRELL SCPA	11/21	TAYLOR	65	49	52	0	52	0:14	
O'FARRELL SCPA	11/21	LAIDLAW	65	49	38	1	39	0:05	
O'FARRELL SCPA	11/21	PAULS	70	54	63	1	64	0:08	

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team
Transportation Bus Audit

SCHOOL	DATE OF AUDIT	CARRIER	A BUS SIZE	B SDUSD CONV.	C NO. STDNTS EXPECTED PER SCHOOL	D-C DIF	D MASTER SCHED FOR TRANSP.	E TIME LATE	F TIME EARLY
O'FARRELL SCPA	11/21	LAIDLAW	78	59	77	(14)	63		0 05
O'FARRELL SCPA	11/21	LAIDLAW	78	59	61	(1)	60		0 06
O'FARRELL SCPA	11/21	LAIDLAW	78	59	68	(3)	65		0 10
O'FARRELL SCPA	11/21	PAULS	70	54	50	(1)	49	0 09	
O'FARRELL SCPA	11/21	PAULS	70	54	47	0	47	0 06	
O'FARRELL SCPA	11/21	MARK IV	91	69	73	(1)	72	0 12	
O'FARRELL SCPA	11/21	MARK IV	91	69	63	3	66		0 03
O'FARRELL SCPA	11/21	SAN DIEGO UNIFIED	41	31	34	1	35	0 05	
O'FARRELL SCPA	11/21	TAYLOR	48	36	21	0	21		0 04
CLAIREMONT H S.	11/15	LAIDLAW	84	58	56	1	57		0 02
CLAIREMONT H S.	11/15	PAULS	65	44	54	7	61		0 03
CLAIREMONT H S.	11/15	TAYLOR	65	44	52	3	55		0 11
CLAIREMONT H S.	11/15	LAIDLAW	78	53	56	4	60		0 03
CLAIREMONT H S.	11/15	GOODALLS	97	66	50	8	58		0 05
CLAIREMONT H S.	11/15	MARK IV	91	62	58	3	61	0 05	
CLAIREMONT H S.	11/15	PAULS	84	38	44	13	57		0 06
MISSION BAY HIGH	11/18	LAIDLAW	91	62	55	14	69	0 19	
MISSION BAY HIGH	11/18	SAN DIEGO UNIFIED	76	52	30	19	49		0 03
MISSION BAY HIGH	11/18	PAULS	70	49	40	7	47	0 05	
MISSION BAY HIGH	11/18	SAN DIEGO UNIFIED	72	49	52	47	99	0 01	
MISSION BAY HIGH	11/18	TAYLOR	65	44	49	(1)	48	0 03	
HEARST ELEM	11/18	LAIDLAW	48	41	41	(5)	36	0 10	
HEARST ELEM	11/18	LAIDLAW	78	67	56	(2)	54	0 30	
DAILARD ELEM	11/18	LAIDLAW	78	67	44	(3)	41	0 39	
DAILARD ELEM	11/18	PAULS	65	56	54	0	54	0 00	
DAILARD ELEM	11/18	SAN DIEGO UNIFIED	41	35	29	(5)	24	0 02	
DAILARD ELEM	11/18	LAIDLAW	91	79	51	21	72	0 19	
DAILARD ELEM	11/18	LAIDLAW	41	35	40	0	40	0 12	
HENRY HIGH	11/22	GOODALLS	97	66	50	12	62		0 01
HENRY HIGH	11/22	LAIDLAW	78	53	44	23	67	0 05	
HENRY HIGH	11/22	LAIDLAW	91	62	70	(4)	66	0 09	

SAN DIEGO UNIFIED SCHOOL DISTRICT
Superintendent's Organizational Study Team
Transportation Bus Audit

SCHOOL	DATE OF AUDIT	CARRIER	A BUS SIZE	B SDUSD CONV.	C NO. STDNTS EXPECTED PER SCHOOL	D-C DIF	D MASTER SCHED FOR TRANSP.	E TIME LATE	F TIME EARLY
HENRY HIGH	11/22	LAIDLAW	78	53	54	4	58	0:07	
HENRY HIGH	11/22	LAIDLAW	78	53	40	20	60	0:01	
HENRY HIGH	11/22	TAYLOR	65	44	37	12	49	0:01	
HENRY HIGH	11/22	LAIDLAW	78	53	47	12	59	0:18	
HENRY HIGH	11/22	LAIDLAW	78	53	35	24	59	0:04	
HENRY HIGH	11/22	GOODALLS	91	62	53	5	58	0:05	
HENRY HIGH	11/22	LAIDLAW	78	53	28	27	55		0:04
MCKINLEY ELEM.	11/25	LAIDLAW	78	73	48	(15)	33	0:01	
PERSHING JR HIGH	11/19	LAIDLAW	65	49	48	0	48		0:02
PERSHING JR HIGH	11/19	SAN DIEGO UNIFIED	65	49	42	(2)	40	0:01	
PERSHING JR HIGH	11/19	TAYLOR	65	49	54	3	57	0:09	
PERSHING JR HIGH	11/19	TAYLOR	65	49	38	3	41		0:05
PERSHING JR HIGH	11/19	PAULS	70	54	50	2	52	0:04	
PERSHING JR HIGH	11/19	PAULS	70	54	41	11	52	0:10	
PERSHING JR HIGH	11/19	TAYLOR	65	49	25	12	37	0:09	
PERSHING JR HIGH	11/19	PAULS	65	49	28	12	40	0:04	
TORREY PINES ELEM	11/20	SAN DIEGO UNIFIED	41	35	42	(12)	30		0:01
TORREY PINES ELEM	11/20	SAN DIEGO UNIFIED	48	41	48	(5)	43		0:04
TORREY PINES ELEM	11/20	TAYLOR	48	41	38	(1)	37		0:02
MUIRLANDS JR HIGH	11/20	PAULS	91	69	54	9	63		
MUIRLANDS JR HIGH	11/20	TAYLOR	65	49	47	10	57		
MUIRLANDS JR HIGH	11/20	LAIDLAW	78	59	61	(1)	60		
MUIRLANDS JR HIGH	11/20	LAIDLAW	78	59	36	20	56	0:01	
MUIRLANDS JR HIGH	11/20	TAYLOR	65	49	45	16	61	0:00	
MUIRLANDS JR HIGH	11/20	LAIDLAW	91	69	58	3	61	0:15	
MUIRLANDS JR HIGH	11/20	LAIDLAW	78	59	49	3	52		0:02
MUIRLANDS JR HIGH	11/20	MARK IV	91	69	61	1	62	0:03	
ROSS ELEMENTRARY	11/19	TAYLOR	16		5	0	5		0:20
ROSS ELEMENTRARY	11/19	SAN DIEGO UNIFIED	29		5	0	5	0:02	
ROSS ELEMENTRARY	11/19	SAN DIEGO UNIFIED	29		3	3	6		0:15
ROSS ELEMENTRARY	11/19	SAN DIEGO UNIFIED	16		6	0	6	0:03	

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ROSS ELEMENTRARY	11/19	PAULS	16		6	1	7	0:15	
ROSS ELEMENTRARY	11/19	SAN DIEGO UNIFIED	16		6	3	9		0:00
ROSS ELEMENTRARY	11/19	PAULS	16		4	2	6	0:12	
ROSS ELEMENTRARY	11/19	TAYLOR	16		9	(1)	8	0:10	
ROSS ELEMENTRARY	11/19	MARK IV	23		13	2	15		0:10
ROSS ELEMENTRARY	11/19	SAN DIEGO UNIFIED	14		7	2	9		0:15
MEMORIAL JR. HIGH	11/26	TAYLOR	16		2	13	15		0:03
RILEY	11/25	SAN DIEGO UNIFIED	41		8	(1)	7	0:10	
RILEY	11/25	SAN DIEGO UNIFIED	29		7	0	7	0:09	
RILEY	11/25	SAN DIEGO UNIFIED	29		4	0	4		
RILEY	11/25	MARK IV	16		9	2	11	0:13	
RILEY	11/25	MARK IV	23		9	0	9	0:32	
RILEY	11/25	SAN DIEGO UNIFIED	14		3	2	5		
RILEY	11/25	SAN DIEGO UNIFIED	16		2	1	3	0:05	
RILEY	11/25	SAN DIEGO UNIFIED	27		5	1	6	0:17	
RILEY	11/25	SAN DIEGO UNIFIED	27		4	0	4	0:15	
RILEY	11/25	SAN DIEGO UNIFIED	13		5	1	6	0:14	
MISSION BEACH	11/25	SAN DIEGO UNIFIED	29		6	2	8		
MISSION BEACH	11/25	SAN DIEGO UNIFIED	14		6	2	8	0:02	
MISSION BEACH	11/25	TAYLOR	16		3	2	5	0:02	
MISSION BEACH	11/25	SAN DIEGO UNIFIED	27		7	0	7	0:02	
MISSION BEACH	11/25	SAN DIEGO UNIFIED	29		9	4	13	0:02	
MISSION BEACH	11/25	SAN DIEGO UNIFIED	16		8	1	9	0:00	
MISSION BEACH	11/25	SAN DIEGO UNIFIED	29		11	0	11	0:02	
MISSION BEACH	11/25	SAN DIEGO UNIFIED	23		13	(2)	11		0:01
MISSION BEACH	11/25	SAN DIEGO UNIFIED	16		5	1	6	0:02	
MISSION BEACH	11/25	TAYLOR	16		3	0	3	0:02	
MISSIION BEACH	11/25	SAN DIEGO UNIFIED	29		10	1	11	0:02	
MISSIION BEACH	11/25	SAN DIEGO UNIFIED	29		7	2	9		0:03
ALCOTT ELEM	11/22	SAN DIEGO UNIFIED	13		9	1	10		0:07
ALCOTT ELEM	11/22	TAYLOR	16		4	6	10		0:20

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ALCOTT ELEM	11/22	TAYLOR	16		11	2	13		0:20
ALCOTT ELEM	11/22	MARK IV	23		4	3	7		0:03
ALCOTT ELEM	11/22	TAYLOR	16		4	2	6	0:01	
ALCOTT ELEM	11/22	MARK IV	16		3	4	7		0:11
HOLMES ELEM	11/22	SAN DIEGO UNIFIED	16		7	6	13		0:17
HOLMES ELEM	11/22	TAYLOR	16		4	6	10		0:16
HOLMES ELEM	11/22	TAYLOR	16		3	2	5		0:15
HOLMES ELEM	11/22	SAN DIEGO UNIFIED	14		5	0	5		0:05
HOLMES ELEM	11/22	PAULS	16		5	4	9		0:04
HOLMES ELEM	11/22	SAN DIEGO UNIFIED	13		6	5	11		0:00
HOLMES ELEM	11/22	SAN DIEGO UNIFIED	23		9	6	15	0:04	
HOLMES ELEM	11/22	TAYLOR	16		2	3	5	0:12	
CUBBERLY ELEM	11/22	SAN DIEGO UNIFIED	29		10	1	11	0:02	
CUBBERLY ELEM	11/22	TAYLOR	16		6	6	12		0:05
CUBBERLY ELEM	11/22	PAULS	16		4	(1)	3	0:10	
CUBBERLY ELEM	11/22	TAYLOR	16		8	0	8		0:05
CUBBERLY ELEM	11/22	TAYLOR	16		3	1	4		0:06
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	13		5	2	7	0:07	
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	13		5	2	7	0:13	
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	13		9	0	9	0:22	
LAFAYETTE ELEM	11/21	TAYLOR	16		8	0	8	0:04	
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	13		11	(2)	9	0:15	
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	27		9	8	17	0:17	
LAFAYETTE ELEM	11/21	TAYLOR	16		8	1	9	0:34	
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	27		9	4	13	0:13	
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	27		9	(4)	5	0:05	
LAFAYETTE ELEM	11/21	SAN DIEGO UNIFIED	14		4	0	4	0:05	